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Cover: Margaret Donnalld giving a banding demonstration to an ANS family field trip at Adventure. Photo by Ann Rogers.



BANDING AT ADVENTURE SANCTUARY

Richard O. Bray

In 1969 Alice Watts Hostetler had her attorney draw up a remarkably simple but effective document that transferred in perpetuity the use of her 14-acre property to the Maryland Ornithological Society, Hood College and The Maryland-National Capital Park and Planning Commission. In accepting title to the property the Park and Planning Commission agreed that "development of abutting park lands shall be done in the manner compatible with the use and purposes of Adventure." Since then Adventure has grown to over 100 acres to be preserved "in its natural state." The cost of maintaining the property is born by the Park and Planning Commission, thereby freeing the other two beneficiaries from any financial burden.

The property is supervised by the Board of Trustees of Adventure. The Board is comprised of two members from each of the three beneficiaries. It is their responsibility to see that Adventure "shall be used for programs of research, education, observation, conservation and related studies in the fields of ornithology, zoology, ecology, botany and similar academic pursuits involving nature and wildlife." In the agreement transferring the property, Mrs. Hostetler spoke of Adventure as a Nature Study Center whose objectives and purposes shall be:

- "To promote the knowledge, understanding and conservation of wildlife and of natural resources;
- "To foster an appreciation of our natural environment and to emphasize its influence on human life;
- "To establish scientific and educational projects, including but not limited to nature walks, observation exhibits and seminars;
- "To protect, study, record and evaluate the wildlife of the area, noting especially the changes as they occur in connection with the ecology of the area."

A number of activities including habitat surveys, winter bird population studies, breeding bird lists, wildflower inventories and mammal observations were reviewed in the previous issue of Maryland Birdlife. However, most extensive "permit use" was begun in 1972 when Margaret Donald initiated a banding program to monitor resident and migratory bird populations. This study is the major on-going project at Adventure, involving 35 to 40 dedicated volunteers each spring and

fall. Banding is done daily in the spring from April 15 through May 31, and in the fall from August 15 through October 31. Mist nets are opened before daylight and closed after dark. By the end of May it becomes a 16-hour-a-day operation. Approximately 23 forty-foot nets and 5 twenty-foot nets are set up in relatively permanent locations. They are located in three distinct habitats: wooded ridge, hedgerow, and floodplain. In an attempt to standardize the banding, the nets are operated for the same number of weeks each year in the same habitats. The present layout has been used since 1974 with minimal change. Because Adventure is on the Potomac Fall Line and has such diverse habitat, the nets catch a fine variety of birds.

At Adventure 30,637 birds of 123 species were banded by the project in 1972-1979. Table 1 shows the most commonly banded birds along with the number of returns for those species. A return is a bird that had

Table 1. Twelve most commonly banded species at Adventure, 1972-1979

<u>Species</u>	<u>Percent</u>	<u>Total Banded</u>	<u>Returns</u>
Yellow-rumped Warbler	11.4	3483	3
White-throated Sparrow	10.3	3151	121
Swainson's Thrush	8.0	2465	0
Gray Catbird	6.0	1839	18
American Goldfinch	4.9	1513	49
Red-eyed Vireo	3.5	1061	41
Cedar Waxwing	2.9	882	0
Ovenbird	2.8	867	0
Song Sparrow	2.7	830	29
Canada Warbler	2.6	812	0
Northern Cardinal	2.5	784	185
American Redstart	2.4	732	0
Top twelve species	60.0	18,419	446
Total banded	100.0	30,637	1007

been banded at least 90 days earlier. In the case of Adventure this means the previous spring or a prior year. Migrants such as Yellow-rumped Warblers that travel great distances provide very few returns. Table 1 shows that Northern Cardinals lead the list of returns; as permanent residents they rarely wander very far from where they hatch. One cardinal at least 7 years old had to have its worn out band replaced in the fall of 1979. Out of 3,483 White-throated Sparrows banded, 121 have returned. They migrate north in the spring but at least some return in the fall to the same wintering ground. One White-throat that returned to Adventure nets was 6 years old. It is interesting that seven of the 123 species banded provided 44 percent of all the returns. The Northern Cardinals and White-throated Sparrows alone provided 30 percent of all returns. Of the top 12 species, five have had no returns at all. Ernie Meyers studied returns to Adventure nets. In addition to the

Northern Cardinal and White-throated Sparrow he determined that a Downy Woodpecker had reached the age of seven, and a Carolina Chickadee was at least six years old when last recaptured. He noted that out of 35 cowbirds banded, only females returned and these did so only in the spring; 9 females returned, for a 28 percent return rate. Updating the work started by Mr. Meyers, Ives Hannay and Ed Smith found an 8-year-old record for a Downy Woodpecker and a 7-year-old Carolina Chickadee in the spring of 1980. These banders also pointed out the high return rate of the following species: 14 out of 160 (9%) Acadian Flycatchers, 5 out of 67 (7%) Kentucky Warblers, and 6 out of 25 (24%) Northern Parula Warblers. Altogether 45 species have returned to Adventure nets through the spring of 1980.



Figure 1. All birds have their wing chord measurements and weight taken, are assigned to a migratory fat class, and when possible, aged and sexed.

Photo by Missy Lankler

Resident birds with high return rates are excellent research subjects. Ways of understanding population dynamics by comparing and analysing banding data are discussed in a paper by Chandler Robbins, "Suggestions on Gathering and Summarizing Return Data." Annual survival rates, age structure of a population, changes in sex ratios and age, and life expectancy are some of the items that can be determined using return data from banded birds. The effect of weather, food supply, and habitat change can be related to this information.

Additional studies are based on the direct observation of returns. Knowledge about molt and its use in ageing and sexing different species by carefully observing return birds is added to continually. At Adventure an attempt was made to determine the color hue of Canada Warbler back feathers, as an aid in ageing and sexing this species. It was found that one of the limitations in such a study was the variation in perception of subtle color differences on the part of different banders. Another area of study is parasites. "Hippos" are seen sooner or later by all banders; these hippoboscids flies scurry under the feathers of an occasional bird during processing. Most field observers have only a hint of the populations of microscopic parasites that exist on birds. The "grey wash" seen on flight feathers can be a thriving population of mites. Melbourne A. Carriker (1879-1965) spent sixty years studying neotropical Mallophaga, which are flea-like bird parasites. His papers were reprinted in a Smithsonian Bulletin, Carriker on Mallophaga, edited by K. C. Emerson. This book catalogues the tremendous variety of parasites associated with birds. Studying these parasites from samples taken from return birds is a potential area of future research at Adventure.

Use of the Adventure banding data as an educational and research tool is one of the ways Mrs. Hostetler's goals are being achieved. Clifford Cook studied the daily activity patterns of selected species at Adventure in 1976. At that time he was a senior in Georgetown Day School. The school allows seniors to take a third of the year off to work on special projects as a part of their senior studies program. In addition to his daily activities at Adventure he used the banding data gathered in the springs of 1974 and 1975 to prepare graphs on the activity of selected species. He reasoned that this activity could be measured by their presence in the nets at different times in the day. Figure 2 shows activity graphs for White-throated Sparrow, American Goldfinch, and Swainson's Thrush. It is interesting to note the difference among species. American Goldfinches become active later in the day than Swainson's Thrushes or White-throated Sparrows. White-throats show a higher degree of activity at the end of the day than do the other two species.

Stella Koch is presently studying sex and age differentials in the timing of migration for several species including Red-eyed Vireos, Magnolia Warblers, Canada Warblers, and White-throated Sparrows. Similar studies at Powdermill Nature Reserve in Pennsylvania and at Cornell University in New York have shown this to be a fruitful field of inquiry.

John Baines, who is on the staff of the Maryland-National Capital Park and Planning Commission, analyzed Yellow-rumped Warbler data for the autumns of 1974 to 1976. His study, summarized in Table 2, was designed to determine whether wing chord measurements could be used to reduce the confusion in sexing immature males and adult females during the fall. He found a difference of one to two millimeters in wing chord length between the two groups. However, for a variety of reasons including potential variation in measurements made by different banders,

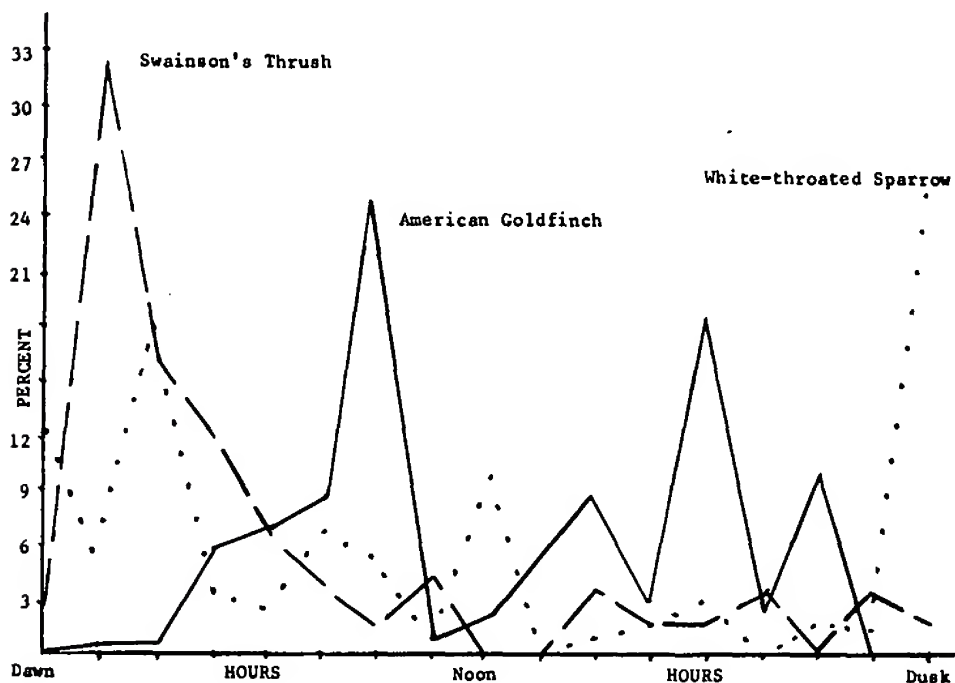


Figure 2. Activity patterns of Swainson's Thrush, American Goldfinch, and White-throated Sparrow as measured by the percent of the total of each species found in the nets at different times of the day.

Table 2. Yellow-rumped Warbler wing chord confidence limits, autumn 1974-1976

Wing Chord (mm)		Percent of Females <u>above given wing chord</u>	Percent Accuracy <u>of being Male</u>
<u>Adult</u>	<u>Immature</u>		
75.80	73.73	0.1	99.9
74.47	72.62	1.0	99.0
74.00	72.23	2.0	98.0
73.30	71.64	5.0	95.0
		Percent of Males <u>above given wing chord</u>	Percent Accuracy <u>of being Female</u>
70.58	68.89	5.0	95.0
70.01	68.25	2.0	98.0
69.63	67.82	1.0	99.0
68.56	66.60	0.1	99.9

he concluded that the use of wing length in sexing the two groups should be limited.

Recoveries elsewhere of birds banded at Adventure are always exciting. A recovery is a bird reported at a new location. It is called a direct recovery when the bird flies directly there during migration or during a period of dispersal wandering. An indirect recovery is a bird that is encountered in a subsequent season. Through 1979 Adventure has had 10 direct recoveries and 23 indirect recoveries. Figure 3 was prepared by Loretta Haggard, who is a sophomore in high school and is studying recoveries of Adventure birds. She is using the banding data for a 1980 Science Fair project on dispersal patterns of resident and migrant birds.

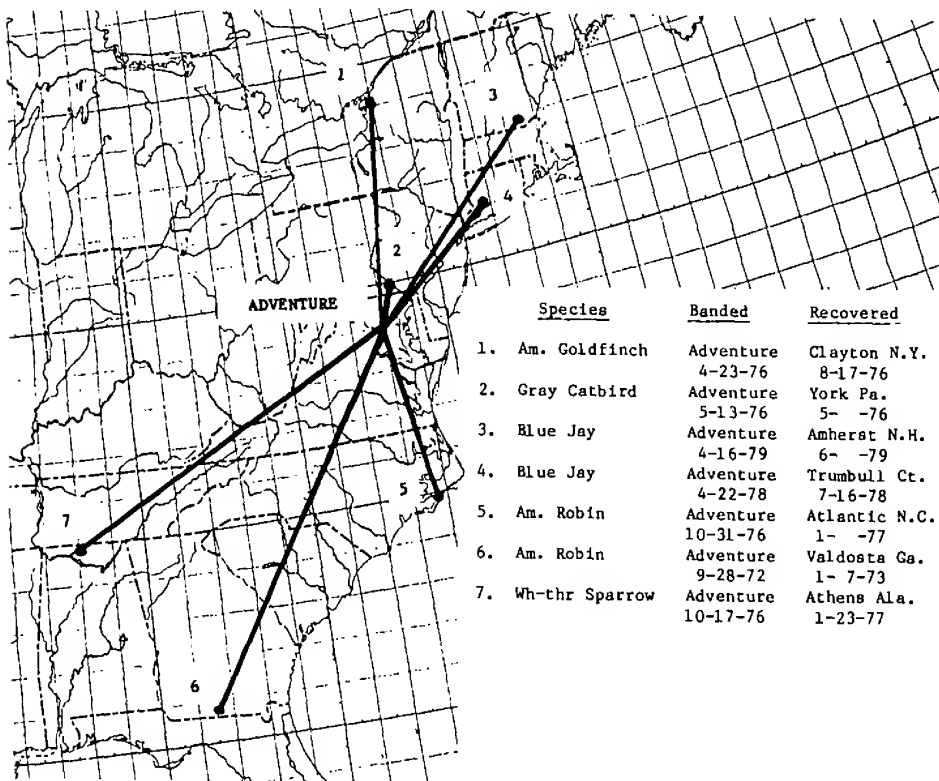


Figure 3. Direct recoveries more than 50 miles away of birds banded at Adventure, 1972-1979

Recoveries of Adventure birds include a Northern Waterthrush banded during spring migration in May 1975 and recovered that fall at Faraday Lake, Ontario. A Gray Catbird banded in the fall of 1973 became an in-

direct recovery in July 1975 near its breeding ground in Springfield, Nova Scotia. Two hatching year Blue Jays were banded within five days of each other in October 1974. Both were indirect recoveries in Massachusetts, one in October 1975 and the other in January 1977. This could support the theory that young Blue Jays go through a period of migratory wandering before settling down when they get older. One of the nicest indirect recoveries was a Connecticut Warbler banded in September 1976. It was found the following spring in May at Black River Falls, Wisconsin. It, like others of its species, had continued down the Atlantic flyway to South America, then returned the following spring by way of the Mississippi flyway.



Figure 4. An October Yellow-rumped Warbler is processed at Adventure.
Photo by Missy Lankler

Foreign recoveries are those birds banded elsewhere and then captured at Adventure. There have been 9 foreign recoveries through 1979. One of the most exciting was a Sharp-shinned Hawk banded in northeastern Massachusetts in October 1975, becoming a foreign recovery at Adventure in the spring of 1977. A Yellow-rumped Warbler banded in May 1975 near the Finger Lakes at Bellona, New York, was recovered at Adventure the following October. A Dark-eyed Junco banded at Dover, New Jersey, in April 1976 was recovered at Adventure in October 1977. In addition to these there have been several recoveries at Adventure of birds banded locally at Great Falls, Woodend (Chevy Chase), Sandy Spring, and Potomac.

In the fall at Adventure banders look forward to the "Big Days." Table 3 shows how they occur in the third or fourth week of October.

At that time Yellow-rumped Warblers swell the banding totals dramatically. Without exception the 18th or 19th of October has been one of the three top days since 1974. Only when the Yellow-rumped Warblers practically disappeared in 1978 did a day in September make the top three. A study of the effect of local weather on "Big Days" produced more questions than answers. It may be that weather north and south is much more important than local weather. A study of spring migration by Regina Mulcahy resulted in a paper in June 1978 on "Weather and Spring Migration of the Ovenbird, Northern Waterthrush and Swainson's Thrush into Adventure Nature Reserve." She concluded that "the bird's physiological condition is of primary importance while favorable weather conditions are secondary."

Table 3. "Big Days" each fall usually occur in the third and fourth week of October at the peak of the Yellow-rumped Warbler migration.

<u>Date</u>	<u>Total birds banded</u>	<u>Yellow-rumped Warblers banded</u>
1974		
Oct. 19	135	20
Oct. 11	125	27
Oct. 18	113	47
1975		
Oct. 20	174	107
Oct. 18	138	59
Oct. 19	128	57
1976		
Oct. 18	218	134
Oct. 21	187	102
Oct. 19	156	85
1977		
Oct. 18	202	96
Oct. 19	166	92
Oct. 23	164	57
1978		
Sept. 10	104	0
Oct. 18	70	7
Oct. 24	59	19
1979		
Oct. 24	163	89
Oct. 19	147	66
Oct. 20	107	63

Table 4 shows the scarcity of Yellow-rumped Warblers in the fall of 1978. This might reflect the poor supply of poison ivy berries the previous winter, which could have caused a population crash. Table 4 also shows such trends in other species. Note that in the fall of 1978 Black-and-white Warblers were double their usual September totals. American Redstarts also increased appreciably, quite a contrast to the decline of

the later migrating Yellow-rumped Warblers. Mourning Warblers were netted in greater numbers in the spring of 1978 than in any other year. Traill's Flycatchers and Canada Warblers also showed a marked increase that spring.

Table 4. Comparison of spring and fall banding and fluctuation in selected species, Adventure, 1974-1979

<u>Spring</u>				
<u>Year</u>	<u>Total Birds Banded</u>	<u>Traill's Flycatcher</u>	<u>Mourning Warbler</u>	<u>Canada Warbler</u>
1974	418	0	2	18
1975	1211	1	1	48
1976	2048	3	6	97
1977	1458	0	1	43
1978	1775	14	25	138
1979	1097	2	3	50

<u>Fall</u>				
<u>Year</u>	<u>Total Birds Banded</u>	<u>Black-&-white Warbler</u>	<u>Yellow-rumped Warbler</u>	<u>American Redstart</u>
1974	2864	30	303	60
1975	3451	63	664	116
1976	3869	35	718	95
1977	3994	30	861	82
1978	2646	71	114	129
1979	3528	41	572	36

The tremendous amount of data accumulated in the process of banding over 30,000 birds are a challenge to analyze. They are available to serious researchers under the direction of Margaret Donald. For most volunteers, however, the excitement of Adventure is its wonderfully varied habitat. This feeling is caught in a letter written in March 1979 by the MOS Adventure Trustees, Margaret Donald and Chandler S. Robbins. The letter asked the Park and Planning Commission to include 5 more acres of ridge line in the Watts Branch "take lines" along the eastern extension of Adventure.

"...the steep south and east facing slopes in this area are rich in wildlife and are particularly important from the standpoint of bird activity. The property forms a ridge extending into a bend of Watts Branch that, from our observation and analysis, is heavily used by migrating birds, especially by warblers, vireos and thrushes. In two normal fall seasons, when net-hours of banding on the Adventure portion of this ridge were 29% of total

banding activity, the area produced 43% of all warblers and thrushes, and 40% of all vireos banded. The area is also heavily used by resident woodpeckers, chickadees and titmice.

"Nets on this ridge have also produced many of the unusual birds (ones that have been seen only once or twice in the course of banding over 27,000 birds). These "rarities" include: Saw-whet Owl, Whip-poor-will, Chuck-will's-widow, Bewick's Wren, Philadelphia Vireo, Prothonotary Warbler, Lawrence's hybrid warbler, and a Bay-breasted X Blackpoll Warbler hybrid (reported only once before in the ornithological literature)."



Figure 5. Josephine, a young hand-raised Northern Oriole, was brought to Adventure in the hopes she would learn to take care of herself in the wild. She did not learn and had to be given to the National Zoo. She died shortly thereafter. It is a lesson worth learning by all who allow young birds to imprint too strongly on their human "rescuers."

Photo by Lutie Semmes

Adventure needs volunteers to fulfill its purpose. Volunteers who come prepared for work are welcome, but they should first contact Margaret Donnalld. There are no picnic facilities and a casual visit will almost certainly interrupt research in progress. As a result visitors are discouraged from coming to Adventure. Instead, MOS chapters are encouraged to schedule field trips to Adventure. Call Margaret Donnalld at (301) 299-6840 to set up a chapter visit. They must be scheduled well in advance. In 1979 the banding station gave 20 demonstrations to groups such as visiting MOS chapters, Audubon Naturalist Society, Uni-

versity of Maryland, Hood College, USDA Graduate School, and Scout groups.

Ornithological training is offered individuals of all ages at the banding station. Sixth grade has proven a good starting age for youngsters. Training goes on through the high school and college levels. The banding station is a wonderful educational facility for older amateurs as well. The only requirements are good physical condition, regular attendance, and a sincere willingness to learn while working. To utilize Adventure as a unique educational facility, knowledgeable volunteers are needed in all areas. They, just like Mrs. Hostetler, can enable others to appreciate the country she so enjoyed.

ACKNOWLEDGMENTS

The author would like to acknowledge the kind assistance and encouragement offered by Margaret T. Donald, M. Kathleen Klimkiewicz, and Chandler S. Robbins. Particular thanks go to the many volunteers who have made working at Adventure such an interesting experience.

5613 McLean Drive, Bethesda, Md. 20014

JOHN SCARBOROUGH, 1979 SCIENCE FAIR WINNER

On March 27, 1979, members of the MOS Education Committee, Ben Poscover, Chairman, attended the 24th Annual Baltimore Science Fair sponsored by the Kiwanis Clubs of Baltimore and The Johns Hopkins University to judge any entry dealing with the study of birds. They were happy to present the 1979 MOS Award for Achievement in Ornithology to John Scarborough, 9th grader at Towsontown Junior High School.

John, a student of Richard Tippet, conducted a month long study of the birds seen in his back yard. February 1979 was a month memorable for its snows and frigid temperatures. John took advantage of the weather variations and studied "The Effects of Temperature, Sunlight, and Precipitation on Eastern Regional Birds." From the large window in his warm living room he monitored the birds at the several well-stocked feeders in his yard. He found that the three factors, temperature, sunlight, and precipitation (snow) had marked effects on the numbers of birds seen at given times of day. He presented his findings in clearly executed graphs. At the May 1, 1979 meeting of the Baltimore Chapter he explained his study and answered many questions about his procedures.

As part of his prize John becomes a member of the MOS for one year. He also receives an autographed copy of "Birds of North America" by Chandler Robbins and a framed Certificate of Achievement in Ornithology. We welcome John to the MOS.

BIRD RESPONSE TO HABITAT IMPROVEMENT IN AN URBAN ENVIRONMENT

Thomas M. Franklin and Lowell W. Adams

Because of continuing societal pressures on the natural environment, it is important that we not only continue to preserve and manage existing wildlife habitats but, also, create and improve habitat whenever possible. Such actions are beneficial to wildlife and can be rewarding to people as well. Development of a 1-hectare urban lot, site of a private recreation facility located in downtown Baltimore, Maryland, afforded an excellent opportunity to study the effect of habitat improvement on birds in an urban environment. The facility was constructed at the previous site of a school and warehouse. The property was cleared of vegetation, except for one mature sycamore tree (*Platanus occidentalis*). Soil at the site consisted of clay, gravel and broken brick.

After construction of the facility in 1974, topsoil was applied. The following shrubs were planted in the spring of 1975 specifically to attract birds: 1000 Memorial Rose (*Rosa wichuriana*), 200 Rugosa Rose (*Rosa rugosa*), 1000 Green-leaf Barberry (*Berberis thunbergii*), 200 Orange Berry Pyracantha (*Pyracantha lalandi*), 50 Flowering Quince (*Cydonia japonica rubra*), and 240 Autumn Olive (*Elaeagnus umbellata*). A few additional replacement plantings (primarily Pyracantha and Autumn Olive) were made in subsequent years.

METHODS

Bird surveys were conducted during the winters of 1975-76 through 1977-78. Three site visits were made during 1975-76: December 19, 1975 (9-11 a.m.); January 8 and February 3, 1976 (1-3 p.m.). One visit was made on February 15, 1977 (8-9 a.m.), and one visit was made on February 26, 1978 (9-10 a.m.). Surveys were conducted on four strip transects 100 yards (91.4m) by 100 yards and the perimeter of the 1-hectare site was used as transect center lines. Some overlap of transects did occur at the corners of the site, but because the same sample design and survey procedure were used each year, study results for comparative purposes were not affected. An observer slowly walked down the center of each transect and counted all birds seen or heard, or both, out to a lateral distance of 50 yards (45.7m) on either side of the center line. If a bird was heard but never seen it was recorded as heard. If a bird was heard and later seen it was recorded as seen. Birds heard and birds seen were summed by species to obtain total birds detected (Table 1). Census time on each transect was 4 minutes, and each transect was covered at least twice per observer visit.

Table 1. Species composition (%) of winter birds detected at the Bolton Hill Study Area, Baltimore, Maryland, 1975-1978.

Species	Year		
	1975-76	1976-77	1977-78
Rock Dove	10.9	17.9	9.0
Mourning Dove	0	5.4	1.5
American Crow	0	0	3.0
Northern Mockingbird	3.0	0	7.5
European Starling	38.6	26.8	19.4
House Sparrow	44.6	41.1	23.9
Northern Cardinal	2.0	0	4.5
House Finch	0	8.9	11.9
Common Redpoll	1.0	0	0
Northern Junco	0	0	19.4
Number of transects	40	16	16
Birds per transect	2.5	3.5	4.2
Total species	6	5	9

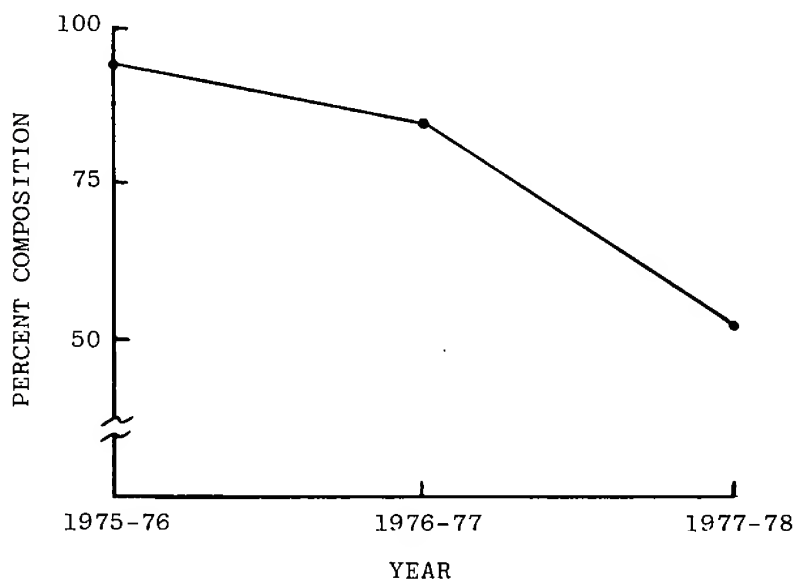


Figure 1. Proportion of the winter bird community consisting of the Rock Dove, European Starling, and House Sparrow over a 3-year period at the Bolton Hill study area, Baltimore, Maryland, 1975-1978.

RESULTS

The first winter after shrub planting (1975-76) 94 per cent of the bird community was represented by three species--the Rock Dove (*Columba livia*), European Starling (*Sturnus vulgaris*), and House Sparrow (*Passer domesticus*) (Table 1). Additional species recorded during the two following years were the Mourning Dove (*Zenaida macroura*), and House Finch (*Carpodacus mexicanus*). The American Crow (*Corvus brachyrhynchos*), and Northern Junco (*Junco hyemalis*) were present during the last year but probably were not particularly attracted to the area. Mean number of birds per transect increased steadily from 2.5 in 1975-76 to 4.2 in 1977-78.

The proportion of the bird community consisting of the three "typical" urban bird species--Rock Dove, Starling, House Sparrow--decreased steadily over the 3-year study period from 94 per cent to 52 per cent (Figure 1). This decrease, coupled with the increased abundance of other bird species, has enhanced the area both from the standpoint of the bird fauna and from the human-interest standpoint of providing more color and life, and recreational and educational opportunities for the people inhabiting the area. We are continuing our monitoring efforts at Bolton Hill--both of wintering birds and breeding birds--in an effort to further document bird response to habitat improvement of the area.

Urban Wildlife Research Center, Inc.,
10921 Trotting Ridge Way, Columbia, MD 21044

REPORT ON 1979 MOS SANCTUARY FUND DRIVE

As recommended by the Budget Committee and approved by the Board of Directors at its meeting of March 10, 1979, a fund drive for maintaining the MOS sanctuaries was conducted in the fall and winter of 1979-80. Envelopes and a cover letter were printed in September, stuffed by members of the Anne Arundel Chapter, and mailed from Baltimore the first week of October. Contributions received were tallied from October 1979 through February 1980. We express our sincere thanks to the 274 individuals and three organizations who made contributions. All donors of \$100. or greater were written personal notes of acknowledgment and thanks by the President. Total contributions, including a donation to cover printing costs, were \$4,453.00.

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 Daniel H. Eberly
 William H. Eichhorn
 W. C. Egan
 Gene Evans
 Philip R. Fautot
 Catherine Fetchero
 Dr. Pat Fetchero
 Elizabeth Fisher
 Mr. & Mrs. A. J. Fletcher
 Mr. & Mrs. John C. Ford, Jr.
 Laura D. French
 Mr. & Mrs. Ralph French
 Glenn E. Funkhouser
 Janet E. Ganter
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 Mrs. Thomas A. Larsen
 Dorothy W. Lawson
 Mrs. John M. Lescure in
 memory of Ono L. Lescure
 Anna H. Llewellyn
 Mrs. Bernice C. Long
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 Frank Megargee
 Mrs. Benjamin Mehlman
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 Mrs. Clarence W. Miles
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 Mr. & Mrs. Murray L. Miller
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THE SEASON

FALL MIGRATION, AUGUST 1 - NOVEMBER 30, 1979

Robert F. Ringler

This was one of the wettest autumns in recent years as precipitation was above normal in all four months: $2\frac{1}{4}$ inches above in August, 4 in stormy September, 2 in October, and $\frac{1}{2}$ in November. Temperatures were near normal in the first two months, but dropped by about 20° in October before the November heat wave averaged $+3\frac{1}{2}^{\circ}$. August's rainfall was scattered throughout the month, but September's deluge was concentrated on the 5th and 6th when the remnants of Hurricane David passed inland, and on the 21st and 22nd. During October, rain continued throughout the first half of the month, punctuated by snowfall across the State on the tenth, which melted the next day. November's mild weather produced some interesting late records, but the Indian Summer was brought to an abrupt halt when temperatures plummeted on the 29th, producing the first lasting snowfall in the mountains.

The biggest windfall for birders resulted from Hurricane David, which swept through the Caribbean, up the east coast of Florida, and across the Piedmont of the Carolinas and Virginia before crossing Maryland on the night of Sept. 5-6. Up and down the East Coast the storm left a trail of Sooty Terns. Our State was no exception. Jan Reese and Kathy Riddle found a specimen on the beach at Poplar Island, Talbot Co., shortly after the storm. One was picked up alive on a roadside in Owings Mills, Baltimore Co., and given to the Worthleys, but it died soon afterward. It was mounted and is now in the MOS collection at Cylburn. Another was found in Calvert County; see John Fales' article in *Maryland Birdlife* (35: 87). At Sandy Point Hal Wierenga and Bob Augustine watched 2 Sooty Terns moving slowly northward over Chesapeake Bay and feeding on the way. They appeared about a half hour apart at 10:15 and 10:45 a.m. All of these terns were adults. Other notable sightings from this storm and from Hurricane Frederic a week later also included terns. These will be mentioned in the appropriate section in the text. Two days after the passage of David, Chan Robbins noted the first cool morning of the season and the first big movement of migratory birds through the region. He had a large increase in birds banded and a good flight of Broad-winged Hawks at Laurel that day, rather early for a major hawk flight.

November produced its usual big flight of waterfowl in mid-month. This year it occurred on the 11th and 12th. Fran Pope found another

amazing assortment of diving species in Garrett County on the morning of the 12th including 155 Common Loons, 45 Horned Grebes, 20 Redheads, 33 Ring-necked Ducks, 182 Canvasbacks, 140 Lesser Scaup, 58 Common Golden-eyes, 400 Buffleheads, 6 Oldsquaws, 17 White-winged Scoters, 224 Ruddy Ducks, 6 Hooded Mergansers, 16 Red-breasted Mergansers, and 480 American Coots. Other observers also noted large concentrations the same day, and these are reported later in the text.

Observers: Garrett County - Fran Pope, Sallie Thayer; Allegany - Jim Paulus, Jim Wilkinson, John Willetts; Washington - Dan Boone, Truman Doyle, Alice Mallonee; Frederick - David Wallace; Carroll - Bill Ellis, Jerri Newton, Anne & Al Pickert, Betsy Reeder; Baltimore - John Barber, Warren Bielenberg, Rick Blom, Peggy Bohanan, John Canoles, Gladys Cole, Bob Jarboe, Hank & Peter Kaestner, Peter Knight, Mike Resch, Steve Sapperstein, Jim Stasz, Sherman Suter; Harford - Joe Schreiber; Howard - Frances Dawson, David Holmes, Kris Krishnamoorthy, Joanne Moroney, Rosamond Munro, Nan Rhinelander, Jay Sheppard, Steve Simon, Jo Solem, Eva Sunell, Mark Wallace; Montgomery - Larry Bonham, Margaret Donnald, Robert W. Warfield, John Weske; Prince Georges - Ric Conn, Richard Dolesh, Sam Droege, Bill & Floyd Hayes, Chan Robbins; Anne Arundel - Wayne Klockner, Hal Wierenga; Charles - Paul Nistico; St. Marys - Ernie Willoughby; Kent/Queen Annes - Jim Gruber, Chris Ludwig, Floyd Parks; Caroline - Ethel Engle, A. J. & Roberta Fletcher, Inez Glime, Marvin Hewitt, Alicia Knotts, R. Leggett, Mariana Nuttle, I. Wheatley; Talbot - Terry Allen, Lester Coble, Jeff Effinger, George Fenwick, Jan Reese; Dorchester - Harry Armistead.

In migration tables 1 and 2, the following codes are used: w = Washington County; all other dates in the Al/Wa column are from Allegany; c = Charles County and s = St. Marys County; all other dates in the SoMd column are from Calvert; q = Queen Annes County; all other dates in the K/QA column are from Kent. In the last column s = Somerset and all other dates are from Worcester.

Loons, Grebes, Cormorants. Wierenga recorded 100+ flights of Common Loons at Sandy Point on Oct. 25 and Nov. 12. Red-necked Grebes are rarely seen here in fall, but one was in Baltimore Harbor, Nov. 5 (Bielenberg) and on the 22nd (Blom). The big waterfowl fallout of Nov. 12 included 400+ Horned Grebes in Baltimore Harbor (Blom, Barber). Armistead's high count of Pied-billed Grebes at Deal Island WMA was 44 on Aug. 4. Armistead also counted 235 Double-crested Cormorants at Barren Island on Oct. 21. Other interesting cormorant sightings were 1 at Tan-yard on Aug. 27 (Engle), 18 at Kent Narrows on Sept. 10 and 12 in Talbot County, Nov. 4 (Reese), and on Oct. 13, 2 at Rocky Gap (Paulus), 1 immature at Piney Run Park (Ringler), and 1 in Howard County (Simon).

Hérons, Ibis. The last Green Herons reported were singles at Masonville in Baltimore, Nov. 11 (Ringler), and near Deep Creek Lake, Nov. 13 (Pope), the latest ever in Garrett County. An adult Little Blue Heron was in Carroll County at the north end of Liberty Reservoir, Aug. 25 (Ringler, et al.). Adult Little Blues rarely make it to the Piedmont. Interesting counts of Cattle Egrets were 48 at Rose Haven and 80 at Plum

Table 1. Fall Arrival Dates, 1979

	Median		Garr	Al/Wa	Fred	Carr	Balt	Ha/Ce	Howa	Mont	Pr.G	Anne	Sold	Ke/QA	Caro	Talb	Dorc	LES
	10-Yr	1979																
Common Loon	10/ 6	10/ 7	11/ 8	0	0	11/10	10/21	0	0	11/12	0	9/22	-	-	0	8/17	9/23	8/30
Horned Grebe	11/ 1	11/ 5	10/26	0	0	10/20	10/27	0	11/ 3	11/12	0	-	12/ 2	11/ 7q	0	11/18	0	-
Pied-billed Grebe	9/21	9/29	10/12	-	0	9/ 9	10/14	0	10/14	9/15	9/ 1	-	0	9/19	0	9/29	-	9/29
Double-crested Cormorant	9/ 7	9/ 6	0	10/13	0	10/13	9/ 3	0	10/13	0	0	0	10/ 6s	9/10q	8/27	8/30	8/ 3	8/26
Little Blue Heron	8/ 5	-	0	0	0	7/28	7/28	0	0	0	0	0	0	7/29	0	-	-	-
Cattle Egret	-	8/26	0	0	0	0	8/ 5	0	10/15	0	0	8/26	8/26	7/21	0	8/26	-	-
Great Egret	8/ 8	8/ 1	0	0	8/ 1	7/28	7/28	0	0	8/26	8/ 5	-	8/26	7/24	0	-	-	-
Snowy Egret	7/27	8/ 8	0	0	8/ 1	0	7/21	0	0	0	9/22	-	8/26	7/30	0	8/16	-	-
American Bittern	-	11/ 9	0	0	0	10/20	10/14	0	0	0	0	0	0	11/ 9	0	-	12/26	12/27
Whistling Swan	11/ 9	11/10	11/ 4	-	11/12	11/10	11/11	0	11/ 5	11/12	11/ 8	11/ 3	12/ 2	11/ 3	11/10	11/ 3	-	11/10
Canada Goose	9/26	9/14	8/21	-	9/23	8/25	9/20	9/22	9/19	9/23	8/24	9/20	-	9/ 8	8/31	9/ 9	-	-
Snow Goose	10/12	9/24	0	0	0	0	9/22	0	11/12	11/12	11/14	9/23	0	9/24	-	-	9/19	-
Gadwall	9/28	10/16	10/12	11/19	0	10/20	11/11	0	11/ 3	-	8/26	-	0	9/ 5	0	-	9/23	-
Common Pintail	10/ 1	10/ 5	10/12	11/19	0	11/12	10/21	0	9/19	-	10/15	-	0	9/ 5	0	9/ 9	9/23	9/29s
Green-winged Teal	9/28	9/ 2	10/26	9/15	0	8/11	9/ 2	0	10/10	0	8/26	8/24	0	9/28	-	9/ 9	8/ 3	8/ 4s
Blue-winged Teal	8/29	8/26	0	8/ 4	0	-	8/18	0	9/12	8/25	8/26	8/ 6	0	7/31	0	8/28	-	8/27
American Wigeon	9/28	9/29	10/24	11/19	0	10/ 3	10/14	0	9/ 8	9/22	9/29	10/16	-	9/ 5	11/ 3	9/29	9/23	9/29
Northern Shoveler	10/ 5	10/13	0	0	12/16	0	10/13	0	10/29	0	0	0	0	9/ 8	0	-	0	9/29
Redhead	11/ 3	11/15	11/12	11/19	0	11/12	11/22	0	12/ 9	0	11/18	0	0	11/ 7	11/ 3	0	0	-
Ring-necked Duck	11/ 9	10/27	11/12	11/19	0	10/21	10/13	0	10/10	10/28	11/ 4	-	0	10/26	11/ 3	-	0	9/29
Canvasback	11/ 7	11/12	11/12	11/19	0	11/12	11/ 3	0	11/ 3	0	10/20	12/ 7	12/ 2	10/29	11/ 7	11/25	-	-
Lesser Scaup	10/21	11/ 2	10/22	0	0	10/13	10/14	0	11/ 1	0	11/ 4	12/ 7	12/ 2	10/16	11/ 3	11/18	0	-
Common Goldeneye	11/ 5	11/15	11/11	0	12/16	11/12	11/ 3	0	11/ 3	0	11/18	12/ 7	12/ 2	11/ 2	11/ 8	11/24	12/ 2	-
Bufflehead	11/ 4	11/ 8	10/26	0	12/ 2	11/12	9/23	0	11/ 3	11/12	11/ 4	12/ 7	12/ 2	11/ 2	11/ 8	10/14	12/ 2	-
Oldsquaw	11/ 1	11/12	11/12	0	0	11/12	11/10	0	-	11/12	0	12/ 7	12/ 2	10/16	-	11/25	12/ 2	-
White-winged Scoter	10/16	11/ 1	11/12	0	0	0	0	0	0	0	0	12/ 7	-	10/16	0	10/14	10/21	12/ 8
Surf Scoter	-	10/21	0	0	0	0	11/19	0	0	0	0	-	-	10/16	0	10/21	10/21	12/ 8
Black Scoter	-	10/20	0	0	0	0	0	0	0	0	0	-	10/20	10/16	0	10/21	12/ 2	9/ 2
Ruddy Duck	10/20	10/13	10/12	11/19	0	10/20	10/14	0	10/10	10/27	10/ 7	-	0	-	11/ 3	8/28	-	9/29
Hooded Merganser	-	11/13	10/26	11/19	11/12	10/27	11/12	0	11/15	0	0	-	0	11/24	0	12/23	-	-
Common Merganser	-	11/ 6	0	0	0	11/10	10/28	0	0	0	10/15	0	12/ 2	11/ 3	-	0	12/11	0
Red-breasted Merganser	-	11/12	11/12	0	0	11/12	-	0	0	0	0	-	-	11/ 3	0	10/28	12/26	12/27s
Sharp-shinned Hawk	9/25	9/ 8	9/18	9/ 4w	-	9/ 8	9/ 8	-	9/16	9/25	9/ 8	9/ 8	8/18	9/ 6	-	9/ 8	9/23	9/29s
Cooper's Hawk	-	9/19	-	9/ 4w	-	9/15	9/ 8	0	-	9/30	9/16	10/ 6	0	10/ 1	0	9/28	9/23	9/29s
Red-tailed Hawk	-	9/ 5	8/27	9/ 4w	8/24	9/ 3	9/ 8	-	9/19	-	-	9/ 6	-	-	-	8/28	-	-
Red-shouldered Hawk	-	9/11	9/11	9/19w	9/ 8	9/ 3	9/ 2	-	9/29	-	10/15	9/10	-	9/15	-	8/28	10/ 3	-
Broad-winged Hawk	-	8/23	-	9/ 4w	-	9/ 8	8/16	-	-	9/ 9	8/30	8/17	-	8/13	0	8/ 9	-	0
Rough-legged Hawk	11/26	12/ 1	12/21	10/26w	0	0	11/17	0	0	12/27	0	12/29	0	0	12/15	11/ 7	10/20	0
Golden Eagle	-	11/22	0	9/13w	0	0	9/29	0	11/22	0	0	12/ 9	0	-	0	0	12/ 8	0
Bald Eagle	-	8/24	8/18	10/ 8w	0	0	8/16	0	0	0	9/ 8	8/17	0	8/24	-	9/ 1	-	0
Northern Harrier	-	9/ 7	-	9/10w	10/20	9/ 8	9/ 7	-	9/19	9/ 1	0	9/ 6	-	8/24	11/ 6	8/28	-	-
Osprey	-	8/28	-	9/ 4w	8/30	9/ 9	9/ 8	-	8/16	8/26	9/ 8	8/25	8/26	8/ 7	0	-	-	-
Peregrine	-	9/ 9	0	-	0	0	-	0	0	0	8/25	9/23	0	0	0	10/ 6	0	8/18
Merlin	-	9/24	9/24	9/27w	0	0	9/ 9	0	-	0	9/23	9/23	0	10/ 2	0	10/ 6	0	0

Table 1. Fall Arrival Dates (cont.)

	Median																	
	10-yr	1979	Garr	Al/Wa	Fred	Carr	Balt	Ha/Ce	Howa	Mont	Pr.C	Anne	SoMd	Ke/QA	Caro	Talb	Dorc	LES
American Kestrel	-	8/30	-	9/13w	-	9/ 8	8/30	-	9/ 8	-	9/ 8	7/19	-	8/ 1	-	8/ 5	8/ 3	-
Sora	-	9/10	0	0	0	0	0	0	8/18	8/ 5	0	0	0	0	9/26	0	0	9/29s
American Coot	10/19	10/17	10/12	10/19	10/20	10/13	10/14	0	10/15	10/21	10/18	10/20	0	10/16	-	11/22	10/ 3	-
Semipalmated Plover	8/ 4	8/ 5	0	7/21	-	8/25	8/ 5	0	0	8/ 5	0	7/18	0	9/ 8	-	8/16	9/23	7/13
Lesser Golden Plover	-	9/22	0	0	9/29	0	0	0	0	9/15	0	9/14	0	10/18	0	0	0	0
Black-bellied Plover	9/10	8/26	0	0	0	0	8/18	0	0	8/25	0	8/ 8	0	0	0	10/28	10/ 3	8/28
Greater Yellowlegs	8/10	8/ 4	0	8/12	8/ 1	-	8/19	0	9/19	8/ 5	-	7/18	-	7/18	-	9/ 9	8/ 3	7/13
Lesser Yellowlegs	8/ 6	7/29	0	7/20	8/ 1	7/28	7/22	0	-	8/ 5	-	7/10	8/26	7/31	-	-	8/ 3	7/22
Solitary Sandpiper	7/28	7/27	9/ 5	7/21	-	7/28	7/22	0	0	8/ 5	0	7/18	0	7/27	0	0	0	8/ 4s
Spotted Sandpiper	7/26	8/16	-	-	-	8/20	7/28	-	8/16	-	8/26	7/ 1	8/26	7/18	-	8/17	-	7/ 6
Ruddy Turnstone	-	8/13	0	0	0	0	8/18	0	0	0	0	8/11	0	0	0	8/16	0	8/ 4
Common Snipe	9/17	9/ 6	0	0	8/30	-	8/19	0	0	8/ 5	0	9/14	0	10/27	-	10/17	9/23	8/ 4s
Short-billed Dowitcher	7/31	8/19	0	8/12	8/26	0	-	0	0	0	0	7/ 1	0	9/ 5	-	9/ 8	-	7/ 4
Sanderling	8/18	8/25	0	8/12	0	0	9/ 1	0	0	9/17	0	7/28	0	0	0	10/28	0	7/23
Semipalmated Sandpiper	8/ 1	7/28	0	7/21	-	7/28	8/19	0	-	8/ 5	0	7/28	0	7/ 9	0	9/ 9	0	7/ 9
Western Sandpiper	-	8/17	0	0	0	0	-	0	0	8/ 5	0	7/22	0	0	0	8/29	9/23	0
Least Sandpiper	7/25	7/28	0	7/20	0	7/28	7/ 8	0	-	8/ 5	8/26	7/ 9	0	7/ 9	0	9/ 9	-	8/ 4s
Pectoral Sandpiper	8/10	8/ 4	0	7/20	8/ 9	7/28	8/ 5	0	0	8/ 5	0	7/21	0	7/ 5	-	8/16	-	8/ 4s
Dunlin	10/ 1	10/ 8	0	0	10/ 4	0	11/ 1	0	0	10/ 8	0	10/25	0	11/ 4	0	0	9/23	9/29
Stilt Sandpiper	-	8/20	0	8/15	0	0	8/25	0	0	0	0	7/28	0	0	0	8/29	0	0
Bonaparte's Gull	-	-	11/13	0	0	0	11/ 3	0	0	0	0	-	0	11/ 9	0	0	0	-
Forster's Tern	-	8/ 4	0	0	0	0	7/15	0	0	0	0	9/ 5	-	7/24	-	8/15	-	-
Common Tern	-	9/ 3	0	0	0	0	9/ 8	0	0	0	0	9/ 5	-	9/ 1	0	8/16	-	-
Royal Tern	-	8/21	0	0	0	0	-	0	0	0	0	9/ 5	8/26	-	0	8/16	8/ 3	-
Caspian Tern	-	9/ 6	0	0	0	9/ 8	7/15	0	0	0	0	9/ 5	0	9/10g	0	8/30	9/23	-
Black Tern	-	8/26	0	0	0	8/18	7/ 4	0	0	0	8/26	9/ 5	0	8/30	0	-	-	8/26
Saw-whet Owl	-	11/ 4	0	11/ 4	0	0	11/ 4	0	0	10/29	11/19	0	0	10/28	0	0	0	-
Common Nighthawk	8/23	8/26	8/25	-	9/ 1	8/26	8/15	-	8/17	8/22	8/19	-	8/31c	8/26	9/ 7	8/26	-	-
Red-headed Woodpecker	9/20	9/12	0	0	9/ 8	0	9/ 9	0	10/27	-	10/ 7	0	9/15c	9/ 3	0	0	0	0
Yellow-bellied Sapsucker	9/29	9/26	9/23	9/30	9/25	9/26	9/23	-	10/ 1	9/26	9/25	-	9/11	10/18	10/16	9/ 8	-	9/29
Yellow-bellied Flycatcher	9/ 1	8/27	9/ 8	8/27	0	8/25	8/28	8/25	0	8/21	8/22	9/10	0	8/27	0	0	0	0
Traill's Flycatcher	-	8/26	-	8/27	-	-	8/10	-	0	8/20	0	0	8/26	9/ 2	0	0	0	0
Least Flycatcher	8/31	8/23	-	8/26	0	9/ 8	7/31	0	0	8/21	8/19	8/17	0	8/27	0	9/ 8	0	0
Olive-sided Flycatcher	8/26	9/ 4	0	0	9/ 8	0	9/ 8	0	0	9/ 1	0	0	0	8/26	0	0	0	0
Tree Swallow	8/12	8/13	-	0	8/30	7/ 9	8/13	0	8/ 9	-	8/25	-	-	7/21	9/28	9/ 8	-	7/13
Red-breasted Nuthatch	9/15	9/12	0	0	0	9/ 9	10/16	0	0	0	0	0	0	9/15	9/ 8	0	0	0
Brown Creeper	10/ 2	10/10	-	11/ 1w	10/17	10/13	9/28	-	9/29	10/ 8	10/13	-	10/20	10/ 6	9/20	10/15	-	9/29
Winter Wren	10/ 4	10/ 9	0	10/13	0	0	9/24	0	10/ 4	10/ 4	10/20	10/ 6	0	10/17	-	10/15	-	-
Hermit Thrush	10/11	10/15	-	10/ 6	-	10/20	9/25	10/24	9/21	9/29	10/ 8	10/20	-	10/17	10/19	10/15	-	-
Swainson's Thrush	9/10	9/ 8	9/ 4	8/27	0	9/15	8/31	9/ 9	-	8/17	9/ 8	-	9/22c	9/ 3	0	9/ 9	9/23	-
Gray-cheeked Thrush	9/24	9/20	9/20	10/ 6	0	0	9/16	0	0	9/20	0	0	0	9/ 8	0	0	0	0
Veery	9/ 4	8/31	8/31	8/27	0	9/ 3	8/14	9/ 1	-	8/22	8/31	0	8/18	8/20	0	9/ 1	9/23	-
Golden-crowned Kinglet	10/ 5	10/ 7	10/26	10/ 7	-	10/13	10/11	10/13	10/ 8	10/ 2	10/ 7	10/ 6	10/20	10/17	9/27	9/30	-	9/29
Ruby-crowned Kinglet	9/24	9/23	9/23	9/15	10/17	9/23	9/13	-	10/ 8	9/11	-	10/11	9/22c	10/ 3q	-	9/ 9	-	-
Water Pipit	10/20	10/16	0	9/28	11/12	0	10/16	0	11/ 5	-	10/ 7	-	0	0	-	10/16	0	-

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Table 1. Fall Arrival Dates (cont.)

	Median		Garr	Al/Wa	Fred	Carr	Balt	Ha/Ce	Hova	Mont	Pr.G	Anne	SoMd	Ke/QA	Caro	TalB	Dorc	LES
	10-yr	1979																
Cedar Waxwing		9/30	9/ 1	-	-	8/13	10/27	10/19	10/22	9/15	8/31	-	-	-	-	9/30	9/23	-
Loggerhead Shrike			0	0	0	0	9/ 6	0	0	0	0	0	0	0	-	8/26	9/23	0
Solitary Vireo	10/ 1	9/23	9/ 4	9/29	-	0	9/22	0	-	9/24	10/13	0	0	9/10	0	0	0	0
Philadelphia Vireo	9/17	9/10	9/20	9/ 8	0	0	9/ 8	0	0	-	0	9/20	0	9/ 9	9/11	0	0	0
Black-and-white Warbler	8/25	8/18	8/ 1	8/26	-	8/18	8/10	8/18	8/18	8/17	8/ 8	9/ 1	8/18	8/ 7	9/11	9/ 8	-	-
Golden-winged Warbler			8/ 9	-	0	0	9/ 8	0	0	0	0	0	0	9/ 9	0	0	0	0
Blue-winged Warbler	8/31	8/16	0	0	-	8/11	8/15	0	8/17	8/25	8/16	0	9/ 3c	8/13	0	0	0	0
Tennessee Warbler	9/ 7	8/29	8/20	8/26	0	9/ 8	8/19	0	8/17	9/ 3	8/26	0	0	9/ 9	9/29	9/ 2	0	0
Orange-crowned Warbler	10/ 2	0	0	10/12	0	0	0	0	0	9/23	0	0	0	0	0	0	0	0
Nashville Warbler	9/ 8	9/ 4	9/ 4	8/27	8/26	-	9/ 4	0	-	9/ 1	9/22	9/20	0	9/ 9	0	9/ 8	0	0
Magnolia Warbler	9/ 6	8/31	8/28	8/26	0	8/25	8/23	9/ 4	8/17	9/ 1	8/31	9/ 1	-	9/11	-	9/ 3	0	-
Cape May Warbler	9/ 8	9/ 9	9/ 1	8/18w	9/29	9/ 8	8/20	0	9/29	9/ 9	9/ 8	-	9/16c	9/11	9/25	9/ 1	-	9/29
Black-throated Blue Warbler	9/ 9	9/ 8	8/20	8/28	0	9/ 8	9/ 3	0	9/29	9/ 1	9/15	0	-	9/ 9	0	9/ 9	0	0
Yellow-rumped Warbler	9/29	9/28	10/10	9/28	10/21	10/14	9/20	-	9/22	9/21	9/16	9/21	-	9/24	10/ 2	10/13	10/ 3	9/29
Black-throated Green Warbler	9/11	9/ 8	8/31	9/ 1	0	9/ 8	9/ 9	0	8/31	9/ 3	9/16	-	0	9/ 9	0	9/ 8	0	0
Blackburnian Warbler	9/ 4	8/27	8/20	8/29	0	8/18	8/17	0	8/17	9/ 8	8/25	0	9/ 3c	9/ 9	0	9/ 8	0	0
Chestnut-sided Warbler	9/ 2	8/25	8/23	8/26	0	8/25	8/17	0	9/18	8/18	8/18	0	-	9/ 9	0	9/ 8	0	0
Bay-breasted Warbler	9/ 7	9/ 1	8/28	9/ 2	-	9/ 9	8/17	0	8/18	9/ 8	9/ 1	8/20	-	9/ 9	0	9/16	0	0
Blackpoll Warbler	9/14	9/10	9/ 8	9/15	0	9/ 8	9/ 8	0	-	9/10	8/20	0	-	9/11	0	9/16	0	9/29
Palm Warbler	9/28	9/19	10/12	9/19	0	9/15	9/ 9	0	-	9/24	9/16	9/20	10/ 6s	0	0	9/ 9	0	9/29
Ovenbird		8/28	8/28	-	-	-	9/ 2	8/14	8/31	8/17	8/19	-	-	8/ 7	8/29	9/ 1	0	-
Northern Waterthrush	9/ 1	9/ 1	9/ 7	-	0	9/ 9	8/14	0	0	8/15	9/ 2	9/ 1	8/26	8/21	0	9/ 1	0	-
Connecticut Warbler	9/17	9/12	9/ 8	10/18	0	0	9/15	0	9/ 9	9/ 7	9/19	0	0	0	0	0	0	0
Mourning Warbler	9/ 6	8/31	0	9/23	0	0	9/ 8	0	0	8/31	8/18	0	0	8/ 8?	0	0	0	0
Wilson's Warbler	9/ 9	9/ 9	9/ 1	9/11	0	9/ 9	8/31	0	-	9/ 8	9/ 8	9/ 8	0	9/ 9	0	9/ 9	0	0
Canada Warbler	8/24	8/18	8/28	8/26	0	8/18	8/17	9/ 1	8/18	8/17	8/18	8/18	0	8/14	0	9/ 8	0	0
American Redstart	8/28	8/14	9/ 4	8/27	8/30	8/11	8/ 6	-	8/18	8/17	8/ 4	8/10	9/ 3	8/ 7	-	8/ 5	0	-
Bobolink	8/30	8/24	-	0	0	8/25	7/15	0	0	8/25	8/24	0	8/26	8/26	8/17	7/18	9/23	8/17
Rusty Blackbird	10/20	10/18	-	0	0	0	10/31	0	0	10/20	10/17	0	-	10/18	0	10/14	0	0
Rose-breasted Grosbeak	9/13	9/ 6	9/ 1	9/ 9	9/ 8	8/18	8/17	0	9/12	9/ 6	9/ 1	0	-	9/ 8	9/16	9/ 1	0	0
Evening Grosbeak	11/ 8	11/ 3	-	-	11/ 4	-	9/16	-	11/ 3	-	-	10/22	0	0	11/ 6	11/ 3	0	0
Purple Finch	10/ 6	9/29	-	9/16	0	10/27	9/16	0	9/29	9/29	9/ 1	-	0	0	10/26	10/14	0	0
House Finch	-	10/16	11/ 1	-	-	10/ 3	-	-	10/ 5	10/20	-	-	10/26c	10/16	8/23	10/16	0	-
Pine Siskin	10/25	0	0	0	0	0	0	0	0	0	10/22	10/23	0	0	0	11/ 4	0	-
Savannah Sparrow	9/25	9/12	-	9/21	0	9/ 9	9/ 6	0	0	9/ 9	-	9/ 6	0	-	-	9/15	9/23	9/29
Vesper Sparrow	-	10/26	10/26	-	-	10/27	10/ 8	0	-	-	0	-	0	10/31	0	0	0	0
Northern Junco	10/ 5	10/14	9/17	9/29	10/20	10/19	10/13	10/24	10/ 8	9/17	10/20	-	10/20+c	10/ 3q	10/14	10/14	-	-
American Tree Sparrow	11/21	11/14	11/30	11/17	11/12	11/14	11/11	0	-	-	11/ 8	11/29	0	-	0	-	0	0
White-crowned Sparrow	10/14	10/20	10/24	10/14w	11/12	10/20	10/ 8	0	10/20	10/14	9/30	0	10/20	0	-	0	0	0
White-throated Sparrow	9/30	9/29	9/23	9/23	10/27	10/13	9/22	9/29	9/27	9/23	-	-	10/14	10/ 8	9/30	10/14	-	-
Fox Sparrow	10/29	10/27	10/26	11/ 1	11/12	11/10	10/27	10/27	10/23	10/25	12/ 3	-	-	0	-	11/22	0	-
Lincoln's Sparrow	9/26	9/16	0	10/19	0	-	9/11	0	10/20	9/17	-	9/16	0	9/ 9	0	0	0	0
Swamp Sparrow	10/ 4	10/ 4	9/ 1	-	10/ 4	10/13	9/12	-	10/ 6	9/24	9/30	10/16	-	10/18	-	10/16	10/ 3	-
Snow Bunting	-	11/20	0	0	0	0	11/ 1	0	0	0	0	10/30	0	0	12/15	12/ 9	0	-

Table 2. Fall Departure Dates, 1979

	Median																		
	10-yr	1979	Garr	Al/Wa	Fred	Carr	Balt	Ha/Ce	Howa	Mont	Pr.G	Anne	SoMd	Ke/QA	Caro	Talb	Dorc	LES	
Double-cr. Cormorant	10/18	10/17	0	10/13	0	10/13	11/17	0	10/13	0	0	0	10/20	9/10q	8/27	10/28	10/21	12/28	
Green Heron	10/ 3	10/12	11/13	-	11/12	9/23	11/11	-	9/12	9/30	10/17	9/26	10/ 6s	10/21	10/ 3	10/21	10/21	9/29	
Little Blue Heron	10/1	8/25	0	0	0	8/25	8/ 5	0	0	0	0	0	0	8/21	0	9/15	-	9/29	
Cattle Egret	10/ 3	10/10	0	0	0	0	9/ 8	0	10/22	0	0	8/26	8/26	10/28	0	10/21	10/21	9/29s	
Great Egret	10/ 9	10/ 4	0	0	9/ 9	10/ 5	11/12	0	0	9/15	10/16	11/16	9/ 3c	10/ 1	10/ 3	12/23	12/11	9/29	
Snowy Egret	10/14	10/16	0	0	9/ 8	0	9/23	0	0	0	9/22	10/29	10/ 6s	10/16q	0	11/22	10/21	12/28	
Louisiana Heron	-	9/10	0	0	0	0	8/ 5	0	0	0	0	8/16	0	9/10q	0	0	10/ 3	9/29s	
Glossy Ibis	9/28	9/ 2	0	0	0	0	9/ 2	0	0	0	0	8/17	0	8/24	0	0	9/23	9/29s	
Blue-winged Teal	10/11	10/28	0	-	0	10/21	11/ 3	0	11/ 5	9/22	11/ 4	-	10/ 6s	11/ 9	0	10/16	12/26	9/29s	
Wood Duck	-	11/ 5	11/30	-	10/20	11/12	10/21	-	11/ 3	11/ 4	11/ 6	-	12/ 2	11/ 9	-	11/25	10/ 3	9/29	
Broad-winged Hawk	9/30	10/ 8	-	10/26w	-	-	10/26	0	10/19	9/ 9	9/23	10/ 8	0	10/ 5	0	10/27	10/ 3	0	
Osprey	10/12	10/21	10/22	11/ 5w	10/ 4	10/20	10/20	0	11/ 8	10/11	10/ 8	11/ 1	10/20	11/ 7	0	10/21	10/24	-	
Semipalmated Plover	9/25	9/22	0	10/13	9/22	8/25	10/21	0	0	9/ 3	0	10/ 7	0	9/ 8	0	9/ 9	0	9/29	
Lesser Golden Plover	10/24	9/27	0	0	9/29	0	0	0	0	9/15	0	9/24	0	10/18	0	0	0	0	
Black-bellied Plover	10/16	9/23	0	0	0	0	8/18	0	0	8/25	0	9/23	0	0	10/28	10/ 3	-	-	
Upland Sandpiper	-	8/24	-	0	-	0	0	0	0	8/ 5	0	9/ 5	8/31s	8/16q	0	0	0	0	
Greater Yellowlegs	10/27	11/10	0	10/20	12/16	11/10	12/ 2	0	11/ 1	-	11/ 4	11/ 4	12/18c	11/ 4	12/15	11/ 6	12/26	12/28	
Lesser Yellowlegs	10/ 8	11/11	0	10/20	11/23	8/25	12/ 9	0	10/29	9/ 3	10/17	10/ 1	8/26	11/24	11/26	10/13	12/26	12/28	
Solitary Sandpiper	9/23	9/ 8	9/ 5	9/15	9/16	8/25	9/ 8	0	0	0	0	8/27	0	9/ 8	0	0	0	-	
Spotted Sandpiper	9/23	9/29	-	10/16	-	-	9/ 3	-	8/31	10/ 6	10/17	10/ 1	8/26	9/ 8	-	9/29	-	-	
Short-bill Dowitcher	-	9/ 5	0	-	8/26	0	-	0	0	0	0	8/19	0	9/ 5	0	9/ 8	10/ 3	-	
Sanderling	-	10/21	0	8/12	0	0	9/ 7	0	0	0	0	11/ 9	0	0	0	10/21	12/27s	-	
Semipalmated Sandp.	9/25	10/11	0	10/ 3	9/22	8/25	11/ 1	0	11/ 1	9/ 3	0	9/23	0	10/18q	0	10/18	0	12/ 8	
Least Sandpiper	9/19	10/ 1	0	10/20	0	-	10/21	0	11/ 1	8/26	8/26	10/ 1	0	8/10	0	9/ 9	10/21	-	
White-rumped Sandp.	-	-	0	0	0	0	0	0	0	8/26	0	9/ 6	0	9/ 8	0	0	0	0	
Pectoral Sandpiper	10/11	10/21	0	10/16	-	10/21	10/24	0	0	-	0	11/ 8	0	9/ 8	11/ 3	12/ 4	10/21	9/29	
Dunlin	11/10	11/ 1	0	0	11/12	0	11/ 1	0	0	10/ 8	0	10/25	0	11/ 4	0	0	-	-	
Laughing Gull	11/ 3	12/ 2	0	0	0	0	12/31	-	0	0	10/ 7	1/18	12/ 2+c	10/26	0	11/25	12/11	12/27s	
Forster's Tern	11/ 3	11/ 9	0	0	0	0	11/11	0	0	0	10/ 7	10/20	12/ 2	11/ 7	0	11/25	-	-	
Common Tern	10/15	9/30	0	0	0	0	0	0	0	0	9/30	10/20	12/ 2	9/ 1	0	9/ 9	-	-	
Royal Tern	-	11/ 5	0	0	0	0	-	0	0	0	0	11/20	11/20	10/16	0	11/22	10/21	9/29	
Caspian Tern	10/ 7	10/11	0	0	0	9/ 8	10/21	0	0	0	0	11/26	10/ 6s	10/16	0	10/21	10/ 3	9/29	
Black Tern	-	8/30	0	0	0	8/18	-	0	0	0	9/22	9/14	0	8/30	0	-	-	8/26	
Yellow-billed Cuckoo	9/27	10/21	-	10/13	9/10	9/15	10/28	-	10/26	10/20	-	-	10/ 6s	10/16	10/23	10/21	11/22	-	
Black-billed Cuckoo	9/27	9/13	-	8/29	-	0	9/20	0	0	9/25	0	0	0	9/13	0	9/ 9	0	0	
Whip-poor-will	-	9/17	-	-	-	-	-	-	10/ 5	-	-	-	-	8/ 6	9/11	-	9/23	-	
Common Nighthawk	9/17	9/25	8/26	9/29	9/29	-	10/11	-	9/25	9/30	9/ 3	-	9/11c	9/13	9/ 7	10/ 2	-	-	
Chimney Swift	10/10	10/19	-	10/26	10/18	10/ 7	10/25	-	10/21	10/21	10/20	9/26	10/15c	10/19	-	10/21	10/ 3	9/29	

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Table 2. Fall Departure Dates, 1979 (cont.)

	Median		Garr	Al/Wa	Fred	Carr	Balt	Ha/Ce	Howa	Mont	Pr.G	Anne	SoMd	Ke/QA	Caro	Talb	Dorc	LES
	10-yr	1979																
Ruby-thr. Hummingbird	9/27	9/26	-	10/26	8/30	10/13	9/23	-	9/26	11/20	9/22	-	9/23c	9/13	10/19	10/11	9/23	9/29
Eastern Kingbird	9/15	9/1	-	-	8/30	8/11	9/2	-	8/24	9/1	9/1	-	8/26	9/13	9/19	9/16	-	-
Gt Crested Flycatcher	9/16	9/10	8/27	-	-	9/9	-	-	9/16	9/8	9/8	-	9/3c	9/11	-	9/16	-	9/29
Eastern Phoebe	10/24	10/27	10/27	10/21	10/27	10/21	10/28	-	10/26	11/12	12/16	10/16	10/20	10/31	10/26	11/18	0	9/29s
Yellow-bellied Flycat	9/22	9/13	9/8	9/29	0	-	9/18	-	0	9/13	-	9/10	0	-	0	0	0	-
Acadian Flycatcher	9/19	9/4	0	9/1	-	-	9/7	8/25	-	9/28	-	-	8/26	9/8	-	-	0	-
Trail's Flycatcher	9/18	9/12	-	8/27	-	-	9/13	-	0	9/12	0	0	8/26	9/13	0	0	0	0
Least Flycatcher	9/22	9/21	-	9/16	0	9/19	9/23	0	0	9/25	9/25	0	0	-	0	9/16	0	0
Eastern Pewee	10/3	9/30	10/10	9/9	9/29	9/15	10/14	-	10/1	10/16	10/6	9/26	10/6s	9/15	9/15	10/11	9/23	-
Tree Swallow	10/18	10/20	10/12	0	11/12	11/10	10/25	0	10/15	10/15	10/6	10/20	10/20	10/31	10/17	10/28	-	9/29
Bank Swallow	9/10	9/6	0	0	9/8	10/13	8/24	-	0	9/3	8/26	0	8/26+c	9/19	0	9/16	9/23	0
Rough-winged Swallow	9/27	10/10	0	0	10/4	-	-	-	10/6	-	-	10/14	-	9/11	-	10/16	10/21	-
Barn Swallow	9/18	9/29	-	8/17w	9/23	9/22	9/23	-	10/6	10/6	10/12	10/1	9/15c	10/1	-	10/16	9/23	9/29
Cliff Swallow	-	8/25	8/2	-	8/30	8/25	9/15	0	0	0	0	0	0	8/22	0	0	0	0
Purple Martin	9/7	9/3	-	-	-	8/12	9/15	-	8/23	9/1	9/29	9/22	9/3c	9/11	9/3	9/2	-	-
House Wren	10/11	10/13	10/27	10/7	9/29	10/13	11/2	-	10/8	10/20	9/23	-	-	10/18	-	10/16	10/3	-
Gray Catbird	10/21	10/19	10/17	10/28w	9/29	10/21	11/2	10/13	10/9	10/31	10/20	-	10/14c	10/27	10/16	11/4	10/3	-
Brown Thrasher	10/21	10/20	9/23	10/31w	10/5	10/20	12/4	10/6	12/8	10/27	10/14	12/30	10/6s	10/20	11/30	11/25	12/11	-
Wood Thrush	10/11	10/10	10/11	10/6	-	9/16	10/27	9/22	10/10	10/13	10/14	-	9/23c	10/20	-	9/16	-	-
Swainson's Thrush	10/14	10/14	9/27	10/18	0	0	10/21	9/29	10/12	10/26	10/28	10/20	10/7c	9/13	10/24	10/15	9/23	9/29s
Gray-cheeked Thrush	10/10	10/6	9/26	10/6	0	0	10/14	0	0	10/24	0	0	0	9/13	0	0	0	0
Veery	9/28	9/20	9/9	9/9	0	9/9	9/30	9/9	9/25	10/8	10/3	0	-	9/13	0	9/16	9/23	9/29s
Blue-gray Gnatcatcher	9/15	9/12	8/26	-	8/30	8/25	8/7	-	9/8	10/20	-	10/19	9/16c	11/4	-	10/21	-	-
White-eyed Vireo	9/26	10/3	10/3	9/16	-	9/15	10/30	-	9/18	10/8	10/3	-	9/23c	10/17	10/18	9/8	-	-
Yellow-throat. Vireo	9/12	9/10	9/30	-	-	9/9	8/30	-	8/24	9/15	-	10/4	9/8c	9/10	-	-	-	-
Solitary Vireo	10/14	10/21	10/26	10/20	-	0	10/21	0	-	10/25	10/20	0	0	10/18	0	0	0	0
Red-eyed Vireo	10/3	9/29	9/25	10/7	-	9/15	10/8	9/9	9/19	10/16	9/22	9/26	10/8c	10/19	-	9/30	-	9/29
Philadelphia Vireo	9/27	9/28	10/3	9/8	0	0	9/23	0	0	10/16	0	10/11	0	9/13	-	0	0	0
Warbling Vireo	-	-	0	0	9/16	-	-	-	-	9/15	0	0	0	9/13	0	0	0	0
Black-&-white Warbler	10/6	10/12	9/20	-	9/23	10/14	10/12	-	10/20	10/16	10/13	10/21	9/23c	9/15	9/11	10/28	-	9/29
Prothonotary Warbler	-	-	0	0	0	0	-	0	0	9/3	-	-	8/26	8/22	-	0	0	-
Worm-eating Warbler	9/12	9/12	9/24	9/16	-	8/19	9/7	9/4	9/12	9/26	-	0	0	0	0	0	0	-
Golden-winged Warbler	8/31	-	9/4	-	0	0	9/9	0	0	0	0	0	0	9/10	0	0	0	0
Blue-winged Warbler	9/13	9/18	0	-	-	-	9/22	-	9/29	9/19	9/16	0	9/3c	9/10	0	0	0	0
Tennessee Warbler	10/8	10/12	10/11	10/12	0	10/20	10/13	0	9/18	10/26	10/8	0	0	10/18	9/29	9/23	0	0
Nashville Warbler	10/5	10/16	10/14	10/18	-	10/20	10/28	0	10/6	10/28	10/17	9/20	0	9/15	0	9/8	0	0
N. Parula Warbler	10/4	9/29	-	-	-	9/9	9/29	-	9/25	11/4	10/13	-	10/6s	9/15	-	10/28	-	9/29
Yellow Warbler	9/16	9/10	8/26	-	-	9/8	-	-	10/1	-	9/29	-	-	9/10	-	9/9	-	-

Table 2. Fall Departure Dates, 1979 (cont.)

	Median																	
	10-yr	1979	Garr	Al/Wa	Fred	Carr	Balt	Ha/Ce	Howa	Mont	Pr.G	Anne	SoMd	Ke/QA	Caro	Talb	Dorc	LES
Magnolia Warbler	10/ 6	10/13	10/11	10/13	0	10/13	10/14	9/ 9	10/12	10/18	10/13	-	10/ 6s	9/13	9/29	10/28	0	9/29
Cape May Warbler	10/ 5	10/10	10/10	9/30	12/22	-	10/20	0	10/ 5	10/14	10/ 7	10/ 4	10/ 6s	10/27	10/21	10/28	0	9/29
Black-thr. Blue Warb	10/ 8	10/10	10/11	10/ 7	0	10/20	10/20	0	9/29	10/19	10/ 8	0	10/ 6s	9/15	0	10/14	0	0
Black-thr. Green Warb	10/10	10/15	9/24	9/29	0	10/13	10/28	0	10/14	10/16	10/17	10/29	0	9/13	0	10/28	0	0
Blackburnian Warbler	9/28	9/18	9/ 4	9/19	0	9/ 8	9/10	0	10/21	10/17	9/19	0	9/23c	9/13	0	9/16	0	0
Chestnut-sided Warb.	9/29	9/19	9/17	10/ 7	0	9/15	9/18	0	10/11	9/27	9/19	0	9/23c	9/13	0	9/ 8	0	0
Bay-breasted Warbler	9/30	9/30	10/ 6	9/30	9/25	10/20	10/14	0	10/12	10/11	9/25	-	9/23c	9/13	0	9/16	0	0
Blackpoll Warbler	10/10	10/20	10/17	11/ 4	0	10/20	10/31	0	10/20	10/18	10/17	11/ 4	-	10/18	-	10/28	-	9/29
Pine Warbler	10/ 1	-	-	-	0	-	9/23	-	-	9/23	11/25	-	10/ 8c	9/15	-	10/28	-	-
Prairie Warbler	9/20	9/15	9/ 1	-	-	9/15	-	-	10/ 1	9/ 9	-	10/11	-	9/11	-	10/18	-	-
Palm Warbler	10/19	10/17	11/13	9/28	0	9/15	12/ 8	0	10/17	10/22	10/17	11/11	10/ 6s	0	0	10/14	0	-
Ovenbird	10/ 6	10/ 7	10/ 1	10/18	-	-	10/14	-	9/25	10/23	10/12	-	-	10/ 1	-	9/ 9	-	-
Northern Waterthrush	10/ 2	9/13	9/ 9	-	0	0	9/24	0	0	9/25	9/ 7	9/20	8/26	9/13	0	0	0	0
Louisiana Waterthrush	-	8/30	-	-	-	-	8/18	-	9/12	8/30	-	-	-	8/21	-	9/ 9	-	-
Kentucky Warbler	9/ 4	9/ 5	-	9/19	-	9/ 8	9/ 5	8/25	-	9/ 1	-	-	-	8/13	9/13	-	-	-
Connecticut Warbler	9/29	10/ 2	9/ 9	10/18	0	0	10/14	0	9/ 9	10/20	9/19	0	0	0	0	0	0	0
Mourning Warbler	9/25	-	0	9/23	0	0	10/16	0	0	9/ 9	-	0	0	-	0	0	0	0
Common Yellowthroat	10/14	10/20	10/ 1	10/12	9/25	10/27	11/ 9	-	10/13	10/30	10/20	10/ 6	10/ 6s	10/26	12/15	11/18	-	-
Yellow-breasted Chat	9/29	10/ 7	-	9/ 2	-	10/13	11/ 6	-	-	10/17	10/ 7	-	10/ 6s	9/ 7	-	-	-	-
Hooded Warbler	9/16	9/10	10/14	9/ 8	-	-	9/12	-	-	8/28	-	-	-	-	-	-	-	-
Wilson's Warbler	9/29	9/16	9/13	9/11	0	9/ 9	10/12	0	10/ 5	10/20	9/29	0	0	9/10	0	9/16	0	0
Canada Warbler	9/25	9/11	9/11	10/18	0	8/25	9/20	9/ 4	-	9/29	9/ 8	-	0	9/15	0	9/ 8	0	0
American Redstart	10/ 4	10/ 6	10/10	9/19	-	9/15	10/19	-	10/14	10/14	12/16	-	10/ 6s	10/ 1	9/19	10/28	10/ 3	9/29
Bobolink	9/19	9/24	-	0	0	-	10/ 4	0	0	9/ 1	9/ 8	0	8/26	9/19	-	10/16	11/25	9/29s
Orchard Oriole	-	-	0	0	-	-	-	-	-	9/ 1	-	-	-	8/26	9/ 4	-	-	-
Northern Oriole	9/24	9/ 9	-	8/26	-	9/ 9	8/16	-	11/ 6	9/ 3	9/ 9	-	9/ 3c	9/13	11/ 2	9/16	-	-
Scarlet Tanager	10/ 6	10/ 7	10/11	9/30	9/25	10/13	10/21	-	9/12	10/ 7	10/19	-	9/ 3c	10/ 2	10/17	10/21	-	9/29
Summer Tanager	-	-	0	0	0	0	0	0	0	0	0	0	9/27c	9/13	10/ 1	-	-	-
Rose-br. Grosbeak	10/ 6	9/30	9/23	9/30	9/23	-	10/16	0	10/ 4	10/24	10/ 7	0	9/23c	10/ 2	9/24	9/16	0	0
Blue Grosbeak	9/22	9/20	0	0	-	9/ 8	11/23	-	-	10/ 6	9/16	-	9/16c	10/15	9/20	9/ 9	9/23	-
Indigo Bunting	10/ 5	10/ 6	-	10/ 6	-	10/20	10/13	-	9/26	10/11	9/22	-	10/ 6s	10/18	-	9/16	-	-
Rufous-sided Towhee	10/31	10/26	10/31w	11/12	10/21	-	10/31	-	-	11/ 8	10/21	-	-	11/ 4	-	10/28	-	-
Savannah Sparrow	-	11/10	10/24	9/27	0	-	12/ 4	0	0	-	-	12/30	0	-	-	-	-	-
Grasshopper Sparrow	-	9/ 8	-	-	8/30	-	10/16	-	-	-	9/16	-	-	8/ 8	-	-	-	-
Vesper Sparrow	-	12/ 4	10/26	0	12/16	10/27	12/ 4	0	0	1/ 2	0	12/30	0	10/31	0	0	0	-
Chipping Sparrow	10/25	11/ 1	11/14	-	10/29	-	12/ 4	-	10/25	11/ 4	12/23	-	10/12s	10/27	10/20	11/24	-	-
Fox Sparrow	-	12/20	-	-	12/20	-	12/22	-	-	11/ 9	-	12/30	-	-	12/15	11/25	-	12/27s
Lincoln's Sparrow	10/11	10/29	0	11/ 4	0	10/27	12/ 4	0	10/20	10/30	12/23	10/16	10/12c	-	0	0	0	0

Point on Aug. 26 (Wierenga, Blom, Ringler), 150+ in Talbot County, Sept. 9 (Reese), and 54 near Bellevue, also Talbot Co., Sept. 15 (Armistead). Great Egrets were in Frederick County, with 6 flying over Graceham on Aug. 2 (Reese), in Prince Georges County, 1 at Greenbelt Lake on Aug. 7 (Ringler), in Calvert County, 1 at Cove Pt. on Aug. 26 (Wierenga, et al.), and 15 were at Westport in Baltimore on Sept. 8 (Ringler); in southern Dorchester County, 68 were still present on Sept. 23 (Armistead), along with 67 Snowy Egrets. Other Snowies were 1 at Cove Pt. and 1 at Chesapeake Beach, Aug. 26 (Wierenga, et al.) and 5 at Westport, Sept. 8 (Ringler). Armistead's high counts of Louisiana Herons were 55 at Deal Island WMA and 5 at Fairmount WMA on Aug. 4, and 40 in the Elliott Island marshes on Oct. 3. Other Louisianas were 3 at Black Marsh, Baltimore Co., Aug. 5 (Knight), with one remaining to the 18th (Blom), 1 at Sandy Pt., Aug. 16 (Wierenga), and 1 at Kent Narrows, Sept. 10 (Reese). Reese found a Black-crowned Night Heron in Talbot County on Oct. 12, and in Baltimore there were 75 at Masonville, Sept. 20, and 35 at Soller's Pt., Nov. 11 (Ringler, et al.). Rich Rowlett estimated 200-300 Yellow-crowned Night Herons on Smith Island, Aug. 14-15. The only Least Bitterns reported were 2 at Deal Island WMA, Aug. 4 (Armistead), 1 in Kent County, Aug. 26 (Parks), and 2 at Kent Narrows, Sept. 10 (Reese). An American Bittern was at Piney Run Park, Oct. 20 (Ringler, et al.). Armistead counted 95 Glossy Ibis at Deal Island WMA on Aug. 4. In the northern part of the bay, single birds were at Sandy Pt., Aug. 13 and 17 (Wierenga), in Kent County, Aug. 24 (Parks), and at Masonville, Sept. 2 (Blom, et al.). The last was in southern Dorchester County, Sept. 23 (Armistead).

Swans, Geese. Reese estimated 125 Mute Swans at Eastern Neck, Sept. 5. Whistling Swans staged their usual November show. Reese saw 150 flying over St. Michaels on the 3rd and 700 at Eastern Neck on the 7th. Warfield noted another flock at Kent Island on the 10th. The big push came on the 12th when Dolesh estimated 2,000+ at Jug Bay, Wierenga saw 975 going over Sandy Pt., Wallace saw 150 in Howard County, and Warfield counted 20 flocks (700-800 birds) flying down the Potomac Valley at Seneca between 10:40 a.m. and 2:36 p.m. In one of the flocks he saw a blue phase Snow Goose. Movements of Canada Geese were noted in late August in Howard, Prince Georges, and Carroll Counties indicating post-breeding dispersal of local breeders rather than arrival of northern migrants. The largest flight of Canadas arrived in Maryland on Sept. 23 when Stasz saw thousands going over his banding station at Stevenson, Baltimore Co., Bielenberg counted 13 flocks over Ft. McHenry, Warfield saw three flocks over Germantown, and Wierenga estimated 4,200 birds over Sandy Pt. and 2,000 there the next day. Warfield noted other flocks over Silver Spring on Oct. 12 and Germantown on Nov. 3. Reese estimated that 30,000 were in winter quarters at Eastern Neck by Nov. 7. On the 12th Wierenga estimated another 2,000 at Sandy Pt. and Wallace reported 1,000 from Howard County. The MOS Listers' Trip found the Greater White-fronted Goose with its Canada Goose mate and two hybrid young at Blackwater, Oct. 8 (Blom, et al.). Refuge personnel reported the first blue phase Snow Goose at Blackwater, Sept. 19. Other Snow Geese were over Stevenson, Sept. 22 (Stasz), a blue at Sandy Point, Sept. 23 (Wierenga), 600 (mostly blues) at Blackwater, Oct. 20 (Armistead, et al.), 1 in Howard County on Nov. 12 and 20 (Wallace), 1 with swans over College Park on Nov. 14 (Ringler), and 1 blue on Carroll Island, Nov. 22 (Ringler, Blom).

Ducks. Floyd Parks' report noted that Jim Smith saw a Fulvous Whistling Duck in Kent County, Oct. 18. A Baltimore Chapter field trip (Rodney Jones, et al.) discovered a flock of 35 of these beautiful birds at Eastern Neck on Nov. 24, the largest flock ever seen in the State. Southern Dorchester County is the center of Maryland's Black Duck breeding population. Armistead counted 256 there on Aug. 3. Migrants come in much later. A small farm pond in western Baltimore County was virtually covered with 240 Black Ducks on Nov. 17 (Ringler). Nistico found a pair of Gadwall and 2 Green-winged Teal at Piscataway on Aug. 26, probably early migrants. Other early Green-wings were 5 at Blackwater on Aug. 3, 3 at Deal Island WMA, Aug. 4, and 1 at Smith Island, Aug. 13 (all Armistead), 1 at Piney Run Park, Aug. 11 (Ringler), and 1 at Sandy Pt., Aug. 24 (Wierenga). Armistead found 2 adult Blue-winged Teal with 10 downy young at Blackwater, Aug. 3. Reese saw 2 early American Wigeon at Eastern Neck, Sept. 5, and with George Fenwick estimated 45 Wood Ducks in Talbot County, Oct. 18. Two Greater Scaup at Piney Run, Nov. 10 (Blom, Reeder), were rare in the Piedmont. Stasz reported 14 record-early Buffleheads flying over Stevenson on Sept. 23. Good counts for the Piedmont were 58 Buffleheads and 12 Red-breasted Mergansers at Piney Run, Nov. 12 (Ringler). Two King Eiders were at Ocean City, Sept. 29 (Robbins, et al.). Armistead saw 115 White-winged Scoters near Bellevue, Oct. 28, and 2 Surf Scoters on Nov. 10. Mrs. Bohanan found another Surf Scoter on Druid Lake in Baltimore, Nov. 19. On July 20 Gordon and Sally Paul found a female Ruddy Duck with 4 young in a protected cove of Deep Creek Lake. Mrs. Pope saw 3 Ruddies on the lake on Aug. 30, and Reese saw 1 in Talbot County, Aug. 28, which may have summered.

Diurnal Raptors. Totals from the various Maryland hawk watches are tabulated in Table 3. Other sightings were numerous. Turkey Vulture flocks numbered 90 at Cambridge, Sept. 19 (Reese), 250 at Tanyard, Sept. 22 (Engle), and 55 migrants coming to roost in College Park at 4:30 p.m., Nov. 26 (Ringler). Armistead reported 7 Black Vultures near Bellevue on Oct. 15 and 8 in the Transquaking River area on Oct. 21. Northern Goshawks were noted at Stevenson on Oct. 14 (Stasz, Suter) and in Talbot County, Nov. 8 (Effinger). Conn found a Sharp-shinned Hawk at Battle Creek Cypress Swamp, Aug. 18, perhaps an extraordinarily early migrant. Paulus counted 25 Sharp-shins and 540 Broad-winged Hawks migrating past Dan's Rock in 6 hours on Sept. 15. Wierenga noted Red-tailed Hawks going south well into December. Reese found Red-shouldered Hawks to be more numerous on the Eastern Shore this year. Other large flights of Broad-wings were 420 on Sept. 8 and 116 on Sept. 23 at Laurel (Robbins), 670 at Stevenson, Sept. 9 (Stasz, et al.), and 35 at Eastern Neck on Sept. 27 with 30 American Kestrels (Reese). Blom and Reeder saw a dark phase Rough-legged Hawk at Carroll Island on Nov. 17, and a light phase bird was there on the 22nd (Ringler, Blom). An early Golden Eagle was at Stevenson on Sept. 29 (Stasz, et al.), and Cathy and Lenny Williamson observed an adult flying over their house in Columbia on Nov. 22. The first migrant Bald Eagle was an adult flying over the Youghiogheny River in Garrett County on Aug. 18 (Thayer). Others were an adult at Laurel on Sept. 8 and an immature there on the 9th (Robbins), and one at Jug Bay, Oct. 4-5 and Nov. 11 and 29 (Dolesh). Armistead counted 14 in southern Dorchester County, Oct. 3. Five Ospreys were migrating high across the bay to Cove Point on Aug. 26 (Wierenga, et al.).

Table 3. Fall Migration of Diurnal Raptors, 1979

Table 3A. Monument Knob, Washington Monument State Park

<u>Species</u>	<u>Total</u>	<u>First</u>	<u>Last</u>	<u>Highest Counts</u>
Turkey Vulture	18	9/17	10/19	14 on 10/15
Black Vulture	10	9/17	10/19	4 on 9/17
Northern Goshawk*	28	9/13	11/14	7 on 10/20
Sharp-shinned Hawk	2,701	9/ 4	11/ 5	493 on 10/26, 387 on 10/19
Cooper's Hawk	83	9/ 4	10/29	19 on 10/20, 13 on 10/26
Red-tailed Hawk	973	9/ 4	11/14	249 on 11/14, 144 on 11/3
Red-shouldered Hawk	111	9/19	11/14	30 on 10/20, 23 on 10/19
Broad-winged Hawk	2,347	9/ 4	10/26	428 on 9/24, 192 on 9/13
Rough-legged Hawk	1	10/26		
Golden Eagle	4	9/13	10/20	also 1 on 10/8 & 10/19
Bald Eagle	2	10/ 8	10/27	
Northern Harrier	43	9/10	11/14	9 on 10/19
Osprey	97	9/ 4	11/ 5	22 on 10/26, 11 on 10/7
Peregrine Falcon	8	9/13	11/ 4	4 on 10/13, 2 on 9/20
Merlin	6	9/27	10/ 2	5 on 10/2
American Kestrel	108	9/13	10/26	35 on 10/8, 14 on 9/19
Unidentified	365			
Total	6,905	9/ 4	11/14	

Truman Doyle compiled the data from the observations of many people, including Cecily and Phillip Clair and Bill Wells; 52 days, 255 hours. *These goshawk data are unrealistic and probably represent a high percentage of misidentified birds. The totals are extraordinarily high and the dates are incredibly early. It follows that other birds may have been misidentified as well. For the more common species the number is probably a small fraction of the total that actually passed by and does not seriously misrepresent the migration. However, for the rarer species correct identification is critical because a high percentage may be involved. Great caution must be taken in identifying these birds, especially when the view is less than ideal. It is better to be conservative and record questionable birds as unidentified.

Table 3B. Sparks, Northern Baltimore County

<u>Species</u>	<u>Total</u>	<u>First</u>	<u>Last</u>	<u>Highest Counts</u>
Sharp-shinned Hawk	69	9/23	10/21	39 on 10/20
Cooper's Hawk	6	10/20	10/21	5 on 10/20
Red-tailed Hawk	13	9/23	10/20	10 on 10/20
Red-shouldered Hawk	8	10/20	10/21	7 on 10/21
Broad-winged Hawk	272	8/16	9/24	186 on 9/17
Bald Eagle	2	8/16		2 on 8/16
Northern Harrier	3	9/23	10/20	2 on 10/20
Osprey	3	9/18	10/18	1
Merlin	1	10/20		
American Kestrel	4	9/23	10/21	1
Total	381	8/16	10/21	

All data by John Canoles; 15 days, 45 hours of observation.

Table 3C. Ft. Smallwood, Anne Arundel County

<u>Species</u>	<u>Total</u>	<u>First</u>	<u>Last</u>	<u>Highest Counts</u>
Turkey Vulture	108	10/ 3	11/15	65 on 10/14, 7 on 10/8 & 10/25
Sharp-shinned Hawk	1,412	10/ 3	11/15	365 on 10/6, 278 on 10/8
Cooper's Hawk	14	10/ 6	11/ 4	3 on 10/8
Red-tailed Hawk	25	10/ 8	11/15	6 on 11/15, 5 on 10/24
Red-shouldered Hawk	6	10/ 3	11/15	3 on 10/3
Broad-winged Hawk	1	10/ 8		
Northern Harrier	63	10/ 6	11/15	14 on 10/8, 11 on 10/14 & 10/24
Osprey	72	10/ 3	10/15	13 on 10/8, 12 on 10/6 & 10/ 7
Peregrine Falcon	1	10/11		
Merlin	16	10/ 3	10/ 8	7 on 10/8, 5 on 10/7
American Kestrel	406	10/ 3	10/25	124 on 10/14, 114 on 10/8
Total	2,124	10/ 3	11/15	

All data by Hal Wierenga; 16 days, 65 hours.

Table 3D. Sandy Pt.--Annapolis Area, Anne Arundel County

<u>Species</u>	<u>Total</u>	<u>First</u>	<u>Last</u>	<u>Highest Counts</u>
Turkey Vulture	246	9/11	12/ 7	121 on 10/30, 56 on 11/1
Black Vulture	5	11/ 6	11/27	4 on 11/27
Sharp-shinned Hawk	65	9/ 8	11/27	13 on 9/20, 8 on 10/16
Cooper's Hawk	7	10/ 7	11/24	2 on 10/30
Red-tailed Hawk	386	9/ 6	12/15	137 on 10/30, 58 on 11/23
Red-shouldered Hawk	18	9/10	11/27	13 on 11/27, 2 on 10/30
Broad-winged Hawk	76	8/17	9/23	45 on 9/20, 16 on 9/13
Bald Eagle	4	8/17	12/ 1	2 on 9/16
Northern Harrier	12	9/ 6	11/29	2 on 9/23 & 11/6
Osprey	33	8/25	11/ 1	6 on 9/23, 4 on 9/7 & 9/24
Peregrine Falcon	2	9/23	10/ 1	
Merlin	7	9/23	11/23	1
American Kestrel	23	7/19	10/30	4 on 9/20 & 10/16, 2 on 10/30
Total	885	7/19	12/15	

All data by Hal Wierenga; 48 days, 115 hours.

Table 3E. Talbot County

<u>Species</u>	<u>Total</u>	<u>First</u>	<u>Last</u>	<u>Highest Counts</u>
Turkey Vulture	42	9/ 1	11/ 4	22 on 9/1, 20 on 11/4
Black Vulture	1	11/ 6		
Sharp-shinned Hawk	124	9/ 9	11/22	50+ on 10/14 & 10/21
Cooper's Hawk	1	8/28		
Red-tailed Hawk	53	11/22		53 on 11/22
Red-shouldered Hawk	23	8/28	11/22	16 on 11/4, 6 on 11/22
Broad-winged Hawk	69	9/ 9	10/21	30 on 10/14 & 10/21
Rough-legged Hawk	1	11/22		
Bald Eagle	1	9/ 1		
Northern Harrier	5	8/28	11/ 6	3 on 11/6
Osprey	2	10/14	10/21	
Merlin	1	10/21		
American Kestrel	47	9/ 1	11/22	25+ on 9/27, 10 on 10/21

All data by Jan Reese; 11 days.

The Talbot County birds on 11/22 were observed by Reese and Allen from 11 a.m. to 1 p.m. as they came over Claiborne from the Parsons Island area and soared down the Bay Hundred Peninsula toward Tilghman Island. One can only speculate how many birds could have been seen in a full day's coverage and for a full season.

Peregrine Falcon. Early Peregrine Falcons were on Assateague on Aug. 18 (Hayes') and at Patuxent Wildlife Research Center on Aug. 25 (Droege). In Talbot County Reese saw single Peregrines on Oct. 6 at Newcomb and, with George Fenwick, 5 miles east of Easton on Oct. 18, his first in that area since the late 1960's. A Peregrine with jesses was at Back River on Sept. 8 (Ringler, Blom). Peregrines appeared in unprecedented numbers in the east this fall. To fully appreciate the truth of this statement here are a few notes from Scott Ward's summary of the migration from his banding operation on Assateague Island in Maryland and Virginia. Workers at the station made 664 observations of Peregrines during the season. They captured 140 Peregrines (20 adults and 120 immatures). Of these, 7 had been previously banded: 2 released from regional hack sites in Maryland and New Jersey as part of Cornell University's recovery program; an immature female banded at Woodland Dunes, Wis., on Sept. 26 was caught on Oct. 10 and captured again eight days later at Cumberland Island, Ga.; 1 banded at Kittatinny Ridge, Pa., was captured on Oct. 8 and again the next day at Parramore Island, Va.; 2 birds had been previously banded up the coast at Cape May Point and Island Beach, N.J.; and 1 banded south of Back Bay NWR, Va., on Oct. 1 was caught on Assateague (125 miles north!) eight days later. Two birds banded at Assateague were captured at other sites: one banded on Sept. 26 was caught near Corolla Light, N. C., four days later, and one banded on Oct. 12 was caught the next day at Fisherman's Island, Va. The best previous year at Assateague was 1977 when 75 Peregrines were caught. Other migrants observed at Assateague in the course of the season were 31 Turkey Vultures, 152 Sharp-shinned Hawks, 2 Cooper's Hawks, 2 Bald Eagles, 367 Northern Harriers, 94 Ospreys, 163 Merlins, 198 American Kestrels, and 28 unidentified birds, all in 427.5 hours from Sept. 17 to Oct. 19.

Rails, Coots and Gallinules. Jan Reese sent the following note: "I had an unexpected rail treat at Marsh Creek near Tanyard, Caroline Co., at sunset on Sept. 26 when noise-making on my part stimulated brief vocalization of four species - King (5), Clapper (1), Virginia (1), and Sora (2)." A most unusual rail report came from Nathan Webb in Carroll County, who saw an immature Virginia Rail feeding on berries at Piney Run Park on Nov. 3. An early migrant Sora was heard at Summit Hall Turf Farm on Aug. 5 (Suter), and Holmes found one dead along River Road in Howard County near Sykesville on the 18th. Other single Soras were at Kent Narrows, Sept. 10 (Reese), and in Kent County on Sept. 15 (Parks). Wierenga heard his last Black Rail at Sandy Pt. on Sept. 16. Armistead counted 21 Common Gallinules at Deal Island WMA, Aug. 4, and a late bird was on a pond at Sparrows Pt., Baltimore Co., Oct. 21 (Ringler). Paulus estimated 335 American Coots at Rocky Gap, Nov. 10.

Shorebirds. Armistead found 2 Black-necked Stilts at Deal Island WMA, Aug. 4, and Dick Soisson discovered one at Piney Run Park, Sept. 6,

probably deposited by Hurricane David, a unique record for the Piedmont. American Avocets appeared in Baltimore for the first time when 3 were seen at Back River, Aug. 19 (Ringler, Holmes), one remaining through the 25th. Another was at Masonville, Oct. 20-22 (Blom, et al.). The Piping Plover continued its record of annual occurrences in the northern part of the bay with a late bird at Ft. Smallwood, Oct. 25 (Wierenga). Few Lesser Golden Plovers were seen this fall but 2 were in Mt. Olivet Cemetery in Frederick, Sept. 29 (D. Wallace), and one was at Millington, Kent Co., Oct. 18 (Robbins). A Black-bellied Plover was at Summit Hall Turf Farm, Aug. 25 (Bonham). A Hudsonian Godwit, the first for Baltimore, was at Masonville, Oct. 20-22 (Blom, et al.). Two migrant Upland Sandpipers

Table 4. Shorebirds at Sandy Point State Park, Fall 1979

<u>Species</u>	<u>First</u>	<u>Last</u>	<u>Highest Counts</u>
Semipalmated Plover	7/18	10/ 7	8 on Aug. 12, 2 on Aug. 13 and Sept. 6
Killdeer	7/ 9	10/ 7	12 on Sept. 29, 11 on Oct. 1, 9 on Aug. 8
Lesser Golden Plover	9/14	9/24	5 on Sept. 24
Black-bellied Plover	8/ 8	9/23	12 on Aug. 19, 5 on Aug. 8, 3 on Aug. 21
Hudsonian Godwit	9/24		2 on 9/24
Upland Sandpiper	8/13	9/ 5	1 both days
Greater Yellowlegs	7/18	11/11	2 on 7 dates
Lesser Yellowlegs	7/10	10/ 1	23 on Aug. 12, 21 on Oct. 1, 16 on Sept. 24 & 25
Solitary Sandpiper	7/18	8/27	4 on Aug. 3 & 4
Willet	7/15	8/11	2 on July 15 and Aug. 11, 1 on 4 dates
Spotted Sandpiper	7/ 1	10/ 1	11 on Aug. 4 & 8, 9 on Aug. 6
Ruddy Turnstone	8/11	9/23	2 on Aug. 12 & 13 and Sept. 6
Wilson's Phalarope	7/19		1 on 7/19
American Woodcock	7/22	--	1 on several dates
Common Snipe	9/14	10/ 3	3 on Sept. 14, 2 on Oct. 3
Short-billed Dowitcher	7/ 1	8/19	22 on Aug. 12, 9 on Aug. 19, 8 on July 9
Red Knot	8/12		3 on Aug. 12
Sanderling	7/28	11/ 9	31 on July 30, 29 on Aug. 12, 9 on Oct. 7
Semipalmated Sandpiper	7/28	9/23	18 on Aug. 12, 6 on July 30, 5 on Aug. 13
Western Sandpiper	7/22	10/ 1	10 on Aug. 25, 8 on Aug. 24 & 27
Least Sandpiper	7/ 9	10/ 1	8 on July 21, 6 on 5 dates
White-rumped Sandpiper	9/ 6		1 on Sept. 6
Baird's Sandpiper	9/ 5	11/10	1 also on Sept. 6 & 23 and Nov. 9
Pectoral Sandpiper	7/21	11/ 8	9 on Oct. 1, 5 on Sept. 22, 3 on Sept. 14
Dunlin	10/25		2 on Oct. 25
Stilt Sandpiper	7/28	10/ 1	2 on Aug. 3 and Oct. 1, 1 on July 28, Aug. 11, and Sept. 6
Buff-breasted Sandpiper	9/ 8		1 on Sept. 8

were at Summit Hall Turf Farm, Aug. 5 (Suter), one was in Queen Annes County on the 16th (Ludwig), and another was in St. Marys County on the 31st (Willoughby). A Willet was at Back River, an unusual location, Aug. 22-26 (Stasz, et al.). Ruddy Turnstones were seen in Talbot County, Aug. 16 (Reese) and Baltimore County, Aug. 18 (Blom). Parks found a Northern Phalarope at Chestertown, Sept. 11. Early Common Snipe were at Deal Island WMA, Aug. 4 (Armistead), and Summit Hall Turf Farm on the 5th (Suter). Among the reports of Short-billed Dowitchers were the following interesting ones: 1 in a drainage pond next to the Francis Scott Key Mall in Frederick, Aug. 26 (D. Wallace), 8 at Eastern Neck, Sept. 5 (Reese), and 11 near Bellevue, Sept. 8 (Armistead). The only Long-billed Dowitchers reported were at Masonville, Oct. 24 (Kaestner), and at Piney Run Park, Nov. 10 (Blom). Notable Sanderling sightings were 1 at Oldtown, Aug. 12 (Paulus), 1 at Hart Island, Sept. 7 (Stasz), and 2 in Talbot County, Oct. 28 (Reese). There were 27 Western Sandpipers at Rose Haven, Aug. 26 (Wierenga, et al.). The only White-rumped Sandpipers reported were 1 at Summit Hall, Aug. 26 (Bonham), and 2 in Kent County, Sept. 8 (Parks). Baird's Sandpipers spanned a period of almost three months, with 1 near North Point, Aug. 18 (Blom), 1 at Masonville, Oct. 13-14 (Blom, et al.), and a record late bird at Sandy Pt., Nov. 9-10 (Wierenga). An extraordinarily early Purple Sandpiper was at Ocean City, Sept. 29 (Robbins, et al.). All the Stilt Sandpiper reports came from August, with singles at Oldtown on the 15th (Paulus), at Back River on the 25th (Kaestner, et al.), and in Talbot County near the Choptank bridge on the 29th (Effinger). Blom found a Buff-breasted Sandpiper at Green Manor Turf Farm, Sept. 15, a first for Howard County. In addition, see Table 4 for Wierenga's compilation of shorebirds at Sandy Pt.

Jaegers, Gulls. Wierenga and Bob Augustine observed 2 jaegers at Sandy Pt., Sept. 6, following Hurricane David. They believe one bird was an immature Pomarine Jaeger but the other was beyond recognition. On Oct. 5 an immature Parasitic Jaeger flew past Sandy Pt. in good weather (Wierenga). The first Lesser Black-backed Gulls of the season were reported from Baltimore: at Ft. McHenry, Oct. 5 (Bielenberg), and Lake Montebello, Nov. 3 (Blom). Laughing Gulls are quite unusual inland, but Robbins observed 3 over Laurel on Aug. 26 and 40 on Sept. 23. Franklin's Gulls were found for the fourth consecutive fall in Baltimore, with an immature and a subadult at Back River, Oct. 14 (Blom, Ringler, Ted Eubanks), and an adult at Masonville, Oct. 20 (Blom). A Bonaparte's Gull in Baltimore Harbor, Aug. 19 (Holmes, Ringler), may have summered locally. An immature Black-legged Kittiwake was at Sandy Pt. on Nov. 17 (Wierenga, et al.).

Terns, Skimmers. Armistead estimated 140 Forster's Terns in southern Dorchester County, Sept. 23, and Reese counted 50 Forster's and 70 Common Terns in Talbot County, Aug. 16. At Sandy Pt. on Sept. 14 there were 375 Commons with 35 Forster's, 6 Royal Terns, 17 Caspian Terns, and 11 Black Terns (Wierenga) in the wake of Hurricane Frederic. Reese found Royal Terns to be more abundant than ever in the Choptank—Eastern Bay area. His high count for Talbot was 59 on Sept. 1. Another Royal, in Charles County on Sept. 3 (Nistico), was unusual. Nine Royals at Solomons, Nov. 20 (Klockner), were late, while the high count of the season was 230 in the Hooper Is.—Barren Is. area, Sept. 23 (Armistead). The tropical

storm pattern of the season may have been responsible for the increase in Royal Tern sightings. The only Sandwich Tern reported was from Assateague, Aug. 18 (Hayes'), probably a wanderer from a colony to the south. Also related to Hurricane David were the 225+ Caspian Terns in Baltimore Harbor, Sept. 6 (Blum, et al.) and the one at Piney Run, Sept. 8 (Reeder, Holmes). A late Caspian Tern was at Sandy Pt., Nov. 26 (Wierenga). Inland, 3 Black Terns were at Piney Run, Aug. 18 (Holmes, et al.). Another 13 were at Sandy Pt., Sept. 5, and 5 were there the next day (Wierenga) around David. Parks reported 3 from Kent County, Aug. 30. The following misplaced Black Skimmers were seen: 3 immatures at Sandy Pt., Aug. 8-13 (Wierenga), 1 flying past Hart Is., Aug. 25 (H. Kaestner), 1 at Sandy Pt., Sept. 6 (Wierenga, Augustine), 18 at Pt. Lookout, Sept. 11 (Klockner), 3 at Tar Bay, Sept. 23 (Armistead) for the third Dorchester County record, and 2 off St. Michaels Harbor, Sept. 29 (Reese);

Doves, Cuckoos, Owls. Reese counted 80 Rock Doves at Kent Narrows on Sept. 10 and, with Coble, he estimated 180 at Cambridge on Sept. 27 and 165 there on Oct. 6. A late Yellow-billed Cuckoo at Masonville on Oct. 28 (Ringler) was overshadowed by a state record Nov. 22 bird at Blackwater (Debbie Dupree). Rare on the Eastern Shore, a Black-billed Cuckoo was in Talbot County, Sept. 9 (Reese). Effinger reported a Long-eared Owl from Talbot on Oct. 31, and Saw-whet Owls were banded on Oct. 29 and Nov. 7 at Sandy Spring (Weske), at Piney Mt., Allegany Co., on Nov. 4 (Willetts), 2 at Stevenson the same day (Stasz), and 1 in Laurel, Nov. 19 (Robbins).

Caprimulgids, Swifts, Hummingbirds, Woodpeckers. The Hayes' and others heard 2 Chuck-will's-widows in early June at Beltsville, where they may have bred. Armistead heard his last one singing near Bellevue on Aug. 2. The latest Common Nighthawks were seen on Oct. 11 at Memorial Stadium in Baltimore (Stasz), where there were reports of a Lesser Nighthawk that will be presented in a future article. Reese observed over 300 Chimney Swifts funneling into a chimney in Easton on Oct. 4. Several late Ruby-throated Hummingbirds were reported. One was in Denton on Oct. 19 (Nuttle). Another was in Oldtown, where Paulus saw it hovering over some frost-bitten Scarlet Sage flowers along his driveway at 4:05 p.m. on Oct. 26. The latest was in Wheaton where Delores Grant entertained a green-backed hummer on Nov. 20 as it visited the red geraniums and white begonias that were still blooming in a sheltered portion of her yard. Reese counted over 50 Common Flickers in Talbot County on Oct. 21, and on Oct. 4 he found a Pileated Woodpecker at Tanyard, where they are rarely seen. Early Yellow-bellied Sapsuckers were near Bellevue, Sept. 8 (Armistead), and at Battle Creek Cypress Swamp, Sept. 11 (Klockner). Ric Conn sent in a good description of a possible Red-cockaded Woodpecker at the latter location on Aug. 18.

Flycatchers, Larks. The highest count of migrant Eastern Kingbirds was 30+ at Eastern Neck on Aug. 24 (Reese), and the latest was at Tanyard on Sept. 19 (Engle). Reese counted 9 Great Crested Flycatchers in Talbot County, Sept. 9. Jarboe banded an early Least Flycatcher at McDonogh on July 31. A flycatcher that spent Oct. 30 to Nov. 2 at Sandy Pt. (Wierenga) had visual characteristics of a Western Pewee, but could not posi-

tively be identified. Neither pewee has been seen this late in Maryland. The only Olive-sided Flycatchers reported were singles in Kent County, Aug. 26 (Parks), in Montgomery County, Sept. 1-9 (Bonham), at Lilypons, Sept. 8 (D. Wallace), and on Gunpowder Falls the same day (P. Kaestner). Wierenga saw 45 Horned Larks at Sandy Pt., Nov. 11

Swallows. Engle estimated 3,000 Tree Swallows at Tanyard, Sept. 28, and 50+ were still at Eastern Neck, Oct. 16 (Reese). A late one for the Piedmont was at Piney Run, Nov. 10 (Blom). Reese estimated 1,000+ Bank Swallows at Kent Narrows on Aug. 2 and hundreds at Eastern Neck on the 8th. Late Rough-winged Swallows were at Sandy Pt., Oct. 14 (Klockner), 2 near Bellevue on the 16th and 1 at Hooper Is. on the 21st (Armistead). Pope estimated 500 Cliff Swallows on wires near Gortner, Aug. 2. Thirty Purple Martins at Sandy Pt., Sept. 22 (Wierenga), were rather late. At Piney Run on Aug. 25 a swallow flock roosting in a corn field was estimated at 2,000, almost equally Bank, Cliff and Barn Swallows (Ringler).

Corvids, Wrens. Alice Mallonee noted Blue Jay numbers increasing in Washington County in August, but numbers along the bay peaked more than a month later. Reese had Talbot County counts of 500+ on Sept. 30 and Oct. 14, and 400 on Oct. 21. Armistead counted 550 at Hooper Is., Oct. 3, and 475 near Bellevue on the 14th. A Northern Raven was seen near Stevenson infrequently from Aug. 28 to Oct. 31 (Stasz, et al.). Two ravens were flying around the gorge area of Rocky Gap State Park, Evitts Mt., on Oct. 27 (Paulus). November Marsh Wrens were found in Talbot County on the 6th (Reese), at Sollers Pt., Baltimore Co., on the 11th (Ringler), and 2 on Carroll Is. on the 22nd (Ringler, Blom). Armistead heard 2 Sedge Wrens singing on the Elliott Island Road on Aug. 3, and a probable migrant was at Kings Creek on the Choptank River, Talbot Co., Oct. 17 (Reese, Fenwick).

Thrushes, Kinglets, Pipits. Reese and Coble counted American Robins migrating at sunset over Cambridge with 1,500+ on Sept. 19, 500 on Oct. 27, and 438 on Oct. 6. In Talbot County Reese also made single day counts of 25+ Hermit Thrushes on Nov. 18 and 50+ Veeries on Sept. 9 and 16. At 6:30 a.m. on Sept. 27 Robbins estimated 85 Swainson's Thrushes per minute calling as they flew over Carey Run Sanctuary before dawn. Armistead and Ed Marshall saw 2 migrant Blue-gray Gnatcatchers on Aug. 13 at Ewell on Smith Is., where the species does not nest. Late gnatcatchers were at Ft. Smallwood, Oct. 19 (Wierenga), in Talbot County, Oct. 21 (Reese), and in Kent County, Nov. 4 (Parks). Weske banded an early Ruby-crowned Kinglet at Sandy Spring on Sept. 11. Paulus counted 31 Water Pipits at Oldtown on Oct. 19.

Waxwings, Shrikes, Vireos. Reese's highest counts of Cedar Waxwings in Talbot County were 100+ on Oct. 21 and 28. A Loggerhead Shrike was at Rocky Point Park in Baltimore County, Sept. 6-8 (Blom, Ringler). Stasz banded a late White-eyed Vireo near Stevenson on Oct. 30, and Klockner saw a late Yellow-throated Vireo at Sandy Pt. on Oct. 4. Early Philadelphia Vireos were at Gunpowder Falls on Sept. 8 (P. Kaestner), and at Tanyard where there were 2 birds on Sept. 11 (Engle).

Warblers. Among the notable early arrivals of this family were a Tennessee Warbler in Laurel, Aug. 17 (Solem), record early Cape May Warblers in Blairs Valley, Washington Co., Aug. 18 (Boone), and banded in Baltimore on the 20th (Schreiber), a Black-throated Green Warbler in Savage, Howard Co., Aug. 31 (Steve Gniadek), a Bay-breasted Warbler and a record early Blackpoll Warbler found dead at the Tawes Building in Annapolis, Aug. 20 (Klockner), a Palm Warbler banded near Stevenson (Stasz) and one seen in Talbot County (Reese), both on Sept. 9, and an Ovenbird and a Kentucky Warbler that Jo Solem saw in Laurel on Aug. 9. Golden-winged Warblers are rarely reported in fall migration, but Jarboe banded one at McDonogh on Sept. 8, Stasz banded one near Stevenson the next day, and Parks saw birds in Kent County on the 9th and 10th. The only Brewster's hybrid seen was along the Youghiogheny River in Garrett County, Sept. 7 (Thayer). An Orange-crowned Warbler was seen at Violet's Lock on the Potomac, Sept. 23 (Bonham), one was banded on Piney Mt., Allegany Co., Oct. 12 (Willetts), and another was banded at Sandy Spring, Oct. 17 (Weske). The only migrant Cerulean Warblers reported were on Aug. 13 and 28 in Kent County (Gruber), in Calvert County on Aug. 26 (Ringler, Blom), and at Piney Run on Sept. 15 (Blom, Reeder). Migrant Yellow-throated Warblers were reported in Kent County, Aug. 22 (Parks), 2 at Eastern Neck, Aug. 24 (Reese), and late birds at Black Marsh, Sept. 29 (P. Kaestner) and in Montgomery County, Oct. 6 (Bonham). A Chestnut-sided Warbler was feeding young near the Yough on Aug. 2 (Thayer). A Louisiana Waterthrush was still singing near Granite, Baltimore Co., Aug. 18 (Ringler, et al.). A Connecticut Warbler specimen was procured when it crashed into Joanne Moroney's house in Howard County, Sept. 9. The unusually mild weather during the latter part of the warbler migration produced a host of late departures. Here are some of the most interesting ones: a Black-and-white Warbler banded at Sandy Pt., Oct. 21 (Klockner), in Western Maryland Worm-eating Warblers were banded at Piney Mt., Sept. 16 (Willetts) and one the Yough, Sept. 24 (Pope), a Nashville Warbler banded near Stevenson, Oct. 28 (Stasz), a Northern Parula Warbler on the C&O Canal, Nov. 4 (Bonham), a Cape May Warbler at Greensboro, Oct. 21 (Hewitt), a Black-throated Green Warbler banded at Stevenson, Oct. 28 (Stasz) and one seen in Annapolis the next day (Wierenga), October Blackburnian Warblers in Montgomery County on the 17th (Warfield) and Howard County on the 21st (Rhineland), a Chestnut-sided Warbler banded at Piney Mt., Oct. 7 (Willetts), Blackpoll Warblers banded on Nov. 4 at Piney Mt. and at Sandy Pt. (Klockner), a Pine Warbler in Beltsville, Nov. 25 (B. Hayes), a Prairie Warbler at Ft. Smallwood, Oct. 11 (Wierenga), 10 Palm Warblers at the sewage lagoons in Mountain Lake Park with a flock of "Myrtle" Warblers and one last Palm at Broadford Reservoir, Nov. 13 (Pope), a Kentucky Warbler at Denton, Sept. 13 (Knotts), and one banded at Piney Mt., Sept. 19 (Willetts), a Connecticut Warbler banded at Piney Mt., Oct. 18, a Mourning Warbler banded near Stevenson, Oct. 16 (Stasz), a Hooded Warbler banded on the Yough, Oct. 14 (Pope), and a Canada Warbler banded at Piney Mt., Oct. 18. Add to these Jan Reese's fine tally in Talbot County on Oct. 28 of 2 Black-and-whites, a Northern Parula, a Magnolia Warbler, 2 Cape Mays, 3 Black-throated Greens, and a Blackpoll.

Icterids, Tanager. Reese's counts of Bobolinks in Talbot County were 400+ on Aug. 22, 3,500+ on Aug. 28, and 100+ on Sept. 10. Boone found a late Bobolink at Blackwater National Wildlife Refuge on the record date of Nov. 25. Reese saw 15 "Baltimore" Orioles at Eastern Neck, Aug. 24, indicating the peak of that species' migration. Steve Simon saw an adult male "Baltimore" in Howard County, Nov. 6. Reese estimated 2,000 Common Grackles flocking in Talbot County on Nov. 4 and 400+ Brown-headed Cowbirds, Oct. 28. Sapperstein saw a late Scarlet Tanager at his house in Pikesville on Oct. 21.

Finches. Early Rose-breasted Grosbeaks were in Baltimore, Aug. 17 (Bohanan), and 2 were at Piney Run the next day (Holmes, et al.). Seven near Bellevue on Sept. 16 (Armistead) was a good count on the Eastern Shore. Barber saw a late Blue Grosbeak on Carroll Is., Nov. 23. Dickcissels were reported from Sandy Pt., Sept. 23 (Wierenga), and Churchville, Harford Co., Oct. 28 (Spike Updegrove). Stasz saw early migrating Evening Grosbeaks flying over Stevenson, with 2 birds on Sept. 16 and two flocks of about 15 each on the 19th. Robbins noted an early Purple Finch at Laurel on Sept. 1, and Reese estimated 100+ in Talbot County on Oct. 21 and 28 and Nov. 18. Four House Finches were at Eastern Neck, Oct. 16 (Reese) and 10 at nearby Remington Farms, Nov. 24 (Ringler). Kathy Klimkiewicz noted a Pine Siskin at the Patuxent Wildlife Research Center near Laurel on Oct. 22, and one was in Severna Park the next day (Sue Steger). In a year when few siskins entered the region, Reese's high counts in Talbot County, where they can be abundant in migration, were 12 on Nov. 4 and 10 on the 18th. On the same two days Reese counted only 25 and 30 American Goldfinches respectively, reflecting the overall absence of northern finches this season.

Sparrows, Longspurs, Buntings. Two Savannah Sparrows at Eastern Neck on Aug. 8 (Reese) may have bred locally. A Henslow's Sparrow was still singing on the Elliott Island Rd. on Aug. 3 (Armistead). Wierenga found 3 Sharp-tailed Sparrows at Sandy Pt. on Aug. 18 and 1 on Sept. 29. Stasz banded a Nelson's Sharp-tailed Sparrow near Stevenson on Oct. 7 and Wierenga saw another at Sandy Pt. on Nov. 3. This recognizable race breeds in midwestern prairie marshes and is seen here rarely in migration. Seaside Sparrows were at Sandy Pt., Aug. 8 and 18 (Wierenga), and at Eastern Neck, Aug. 20 (James Newlin). Paulus found an adult male Lark Sparrow singing in Oldtown, Aug. 11, probably an early migrant. Glenda Weber found a Northern Junco at Lake Roland on the unexplainable date of Aug. 14, and Weske banded an early migrant at Sandy Spring on Sept. 17. Reese found a migrant flock of 50+ Song Sparrows in Talbot County, Nov. 4. Single Lapland Longspurs were at Sandy Pt. on Nov. 16, 18, and 25 (Wierenga) and on Carroll Is., Nov. 17 (Blom). The first Snow Bunting at Sandy Pt. was seen on Oct. 30, they peaked at 55 on Nov. 16 and 17, and the last flock (33 birds) was there on the 19th (Wierenga). Blom counted 17 Snow Buntings on Pleasure Is., Baltimore Co., on Nov. 1, and 1 was at Ft. McHenry on Nov. 14 (Bielenberg).

BOOK REVIEWS

A FIELD GUIDE TO THE BIRDS

Roger Tory Peterson. 1980. Houghton-Mifflin. 384 pp. 136 color plates, 390 maps. \$15 hardbound, \$9.95 softbound.

The fourth edition of Roger Tory Peterson's eastern field guide is a master's work. It is a desideratum for all who have any interest in birds. Most certainly it will be the field guide for novices. For experts, no ornithological backpack will be complete without it. In so many ways the book is skillfully crafted, enriching the well-deserved reputation of its author and fulfilling the expectations of his minions. But this "Peterson," good as it is, could have been better.

Peterson's greatest strength is that he is both artist and naturalist. The best of his field guides offer a consistency unmatched by any rival. Examine his Guide to the Birds of Britain and Europe (1954), Wildflowers of Northeastern and North-Central North America (1968), and Mexican Birds (1973). This latter volume is a stunning compendium of over 1,000 birds, many of which Peterson illustrated in full color. These paintings are superb, with no blurred or faded pigments. The plate designs presage the 1980 field guide and, in many instances, are far superior.

Perhaps the most difficult task confronting any field guide is that of providing a systematic key which allows for quick identification. Peterson's key is primarily visual. He wisely narrows the scope of his book to cover only species found east of the 100th meridian, believing that a wider range would make identification even more confusing to the beginner. Although mindful of current phylogenetic order, he groups his illustrations around eight visual categories (i.e. - swimmers, birds of prey, passerines, etc.) and, within each, discusses a bird's shape, behavior and habitat, highlighting similarities and differences. He understands that an objective key that would make identification automatic is not possible. Birds are multicolored and highly mobile, characteristics that don't lend themselves to facile labeling. He counsels beginners to spend some time becoming familiar in a general way with the illustrations, to "Acquire the habit of comparing a new bird with some familiar 'yardstick'...." It is sound advice.

In this complete revision Peterson rightly concludes that "A drawing can do much more than a photograph to emphasize field marks." The recent trend of field guides using photographs is therefore lamentable. But because of the increased expectations of his readers, Peterson "leaned more toward detailed portraiture in the [all] new illustrations while trying not to lose the patternistic effect developed in the previous editions." He succeeds.

However, in an artistic sense, Peterson's latest effort does not quite reach the level of his Mexican guide. There are curious inconsistencies. His waterfowl are shown as if they were decoys, while his owls

are boldly rendered three-quarter view portraits. It seems as if there were avian families he felt more deserving of attention than others. His icterids are exquisite; his chickadees are much too homely. His Eastern Bluebird is successful only if one is lucky enough to find a volume in which the blue color hasn't faded to gray. In this instance, the fault is clearly in the reproduction. Peterson should insist that future printings be more faithful to his original art.

His work with warblers is somewhat disappointing. As in his other editions, he fails to point out that the immature male is frequently similar to the adult female, preferring (incorrectly) to label both sexes as immature. Although they are less cluttered than in prior works, Peterson's warbler plates seem much less colorful than he could have made them. More illustrations portraying warblers, indeed all the passerine birds, in habitat would have helped. A nest here, a leaf there, a hint of water, etc. On some occasions this was done. Just a few brush strokes made all the difference.

The most impressive improvement over the 1947 edition is Peterson's treatment of shore, marsh and pelagic birds, especially the latter. All are in color, all are presented honestly yet stylishly. Peterson captures the subtle plumage and the salient field marks with a marvelous economy. As a special treat, he has added detailed sections for most of the accidental, exotic and escaped birds likely to be found east of the 100th meridian. The comprehensive index makes it easy to find the bird you seek.

The text is even more sparse than in previous editions, although the quality doesn't suffer. It is finally coupled directly with the illustrations. For every family there is synopsized important and novel information about the group's structure, food, general world range and the number of species in the world, including the eastern U.S. The measure of a bird's length, given in inches and centimeters, is quite useful. Cogent field marks are described with dispatch and the always helpful voice information imparts a clarity not found in other field guides. The type style makes for easy reading, and the use of bold face to delineate families is extremely effective.

Range maps bring up the rear of the book. Their format is that which Golden Press developed, a fact which Peterson might have been gracious enough to acknowledge. They improve greatly upon Golden Press in that individual states within a region are clearly outlined and very helpful comments about a bird's breeding, migration or population status are noted. Unfortunately, they don't reveal spring arrival dates.

Virginia Marie Peterson, the author's wife, constructed the range maps. The beginner will find these maps utilitarian. But, in a number of cases, they are not accurate. Maryland birders should take note that their State seems to have more than its share of blunders (see Sora, Red-cockaded Woodpecker, Marsh Wren, Worm-eating Warbler, Cerulean Warbler and Savannah Sparrow). There is also inconsistency of method: the breeding ranges of Loggerhead Shrike, Magnolia Warbler and Bachman's

Sparrow are extended to include locations only rarely or formerly visited, while the ranges of Ring-necked Pheasant, Tree Swallow and Yellow-throated Warbler retain narrowly defined traditional boundaries although numerous reports make the case for range extension. Mrs. Peterson herself indicated there were communication problems with the publishers and, no doubt, she was unable to make necessary changes because of publication deadlines. Perhaps future editions will correct and refine the range maps. On balance, her maps and specifically the comments contained therein are a milestone, providing at a glance an enormous amount of information with an accuracy heretofore unknown.

I grew up with Peterson. To me, his books are warm, inviting, friendly. This edition particularly is beautiful and instructive. For example, notice how, with such simplicity, Peterson differentiates between the Nightjars. The illustrations and text are entwined to teach just what we need to know. Peterson reaches out with a common touch. It is also the touch of genius.

My son and I went to the Smithsonian bookstore to purchase copies of his new edition and, only incidently, ask him to autograph the books. After standing in line for over an hour on a lovely day, waiting for the autograph and a chance to meet the man, and after getting our wish and thanking him, we turned to go. Peterson inexplicably gave my son a knowing wink. Two minutes later we were walking down Constitution Avenue when our eyes made contact with--: a mature Peregrine Falcon, searching the ledges of the National Archives, taking its time as if, well, as if it had the time. Minutes later, it flew off rather lazily toward the Washington Monument.

Yes, I'd say Peterson has a touch, all right. My son sleeps with his new edition under his pillow. Being the adult, I keep mine on the night stand.--Jon Boone.

CALL COLLECT, ASK FOR BIRDMAN

James M. Vardamon. 1980. St. Martin's Press, New York. 247 pp., 13 black & white photographs. Appendix A,B,&C. Index. \$10.95.

THE AGE OF BIRDS

Alan Feduccia. 1980. Harvard Univ. Press, Cambridge. 196 pp. Index, bibliography, black & white photographs, line drawings, charts. \$20.00.

These two new books provide a noteworthy contrast in bird study. Jim Vardamon's 1979 quest for a Big Year of 700 bird sightings is full of modern, fast-moving minute-by-minute speculation about the occurrence of bird life on our continent. We've all heard of how his Big Year netted him 699 species, the 700th failing to appear off the Maryland coast in the last days of 1979. We have to admire his persistence, though I feel sure that none of us would have given up either, had we \$44,507.38 to devote to the project. (That's \$63.67 per bird.) The two keys to Vardamon's success, other than money, were advance planning and informed co-operative bird-watchers, well spaced around the continent. He gives

credit to all who helped him accomplish his goal, including Elaine Cook Kaufman, now of Arizona but originally of Pikesville, daughter of Doug and Joan Cook, MOS members who gave their daughter a good start in birding. I was prepared to be skeptical about the book's appeal but found it to be absorbing. What is it about birdwatching that makes us want to read lists of birds, where they're found, and when? This book, with its lists of birds and cooperative people, may be valuable to have on your own library shelf. You may want to plan a Big Year of your own some time.

At the serious end of the range of bird books is "The Age of Birds" by Alan Feduccia, Professor of Zoology at the University of North Carolina. Students of avian evolution are presented with a survey of the development of birds from reptilian forms to modifications for particular life styles and habitats in which we find them today. Charts, graphs, maps, and line drawings enhance speculations about the transition from the beginnings of birdlife on the planet to what is known with certainty today. Modern history of fossil records is outlined, along with clear photographs of the most important discoveries made in the past century. For anyone interested in family trees of birds this book presents the cosmic picture. Original sources are quoted from the writings of Owen 1839 and Marsh 1873 to Ostrom of Yale 1976, among many others listed in the extensive bibliography. It is hard to understand why the publisher included so much blank space on many of the pages, unless it was to provide for the sketches of the angular structures so characteristic of many birds. It all adds up to a rather expensive book, handsome in black and white, a fairly complete treatment of what is known today about the long history of birds.

Reading the two books concurrently, as I did, offered the strong contrast between the superficial approach to bird study over one short year and a picture of the timelessness of the age of birds.--Joy Wheeler.

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